July 8, 1946

STEEL

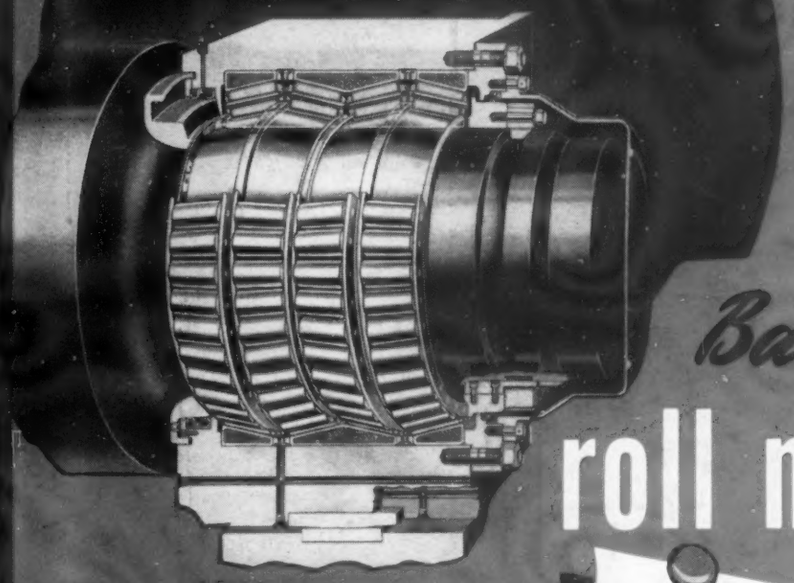
The Magazine of Metalworking and Metalproducing

ESTABLISHED 1882

EDITORIAL INDEX, PAGE 59

TECHNOLOGY DEPT.

More Rigid, More Accurate Rolling Mills

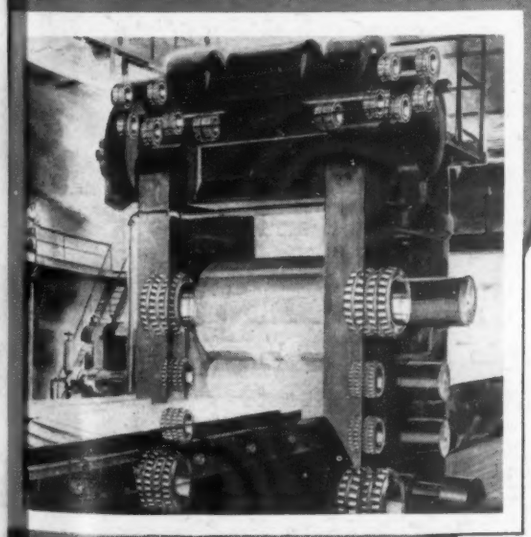


with

TIMKEN

Balanced Proportion

roll neck bearings



Now you can have heavier, stronger, more rigid mills to meet closer rolling tolerances without having to compromise on roll neck bearings.

Now there is no need to forego the efficiency, simplicity, dependability and economy of the roller bearing in order to obtain larger, stronger mill roll necks.

The development of the Timken Balanced Proportion Roll Neck Bearing has introduced a new factor for greatly improved operation into the modern rolling mill situation — just as the development of the original Timken Roll Neck Bearing over 20 years ago revolutionized rolling practices.

Our roll neck bearing specialists will be glad to discuss your rolling mill bearing problems at any convenient time. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

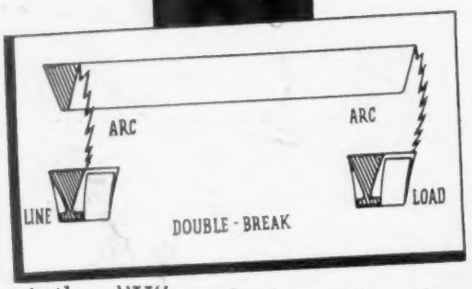
TYPE A SAFETY SWITCH

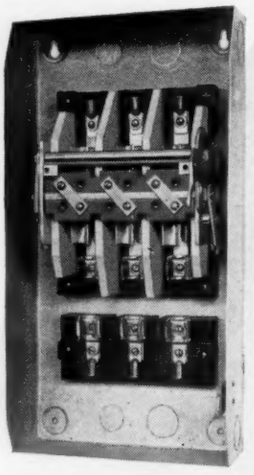
- HEAVY DUTY
- COMPACT
- HANDSOME
- DURABLE

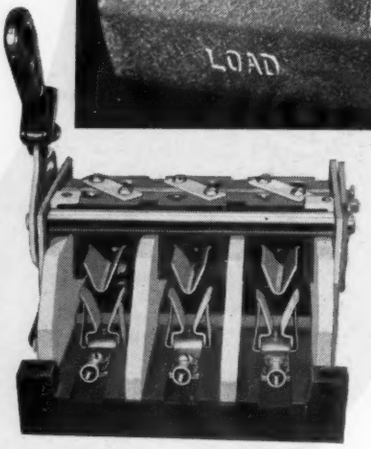
HAS V CONTACTS for

1 Quick *BREAK* of the ARC

2 High current carrying capacity at low temperature rise.







Look at the "V"-contact construction used in EC&M Type A Safety Switches. The moving contact is a V-blade which wedges into the stationary V-contacts, equipped with back-up springs for full contact under heavy pressure. It is due to this design that these Type A Safety Switches can carry rated current with low temperature-rise.

Now, let us see what takes place when this switch opens a circuit. The moving V-blade quickly leaves the two V-stationary-contacts, giving a double-break. Any arc that may be formed as the circuit is opened runs up either of the sloping sides of the contacts to cause a quick rupture. This construction is simple and reliable, too.

HIGH FUSE PRESSURE

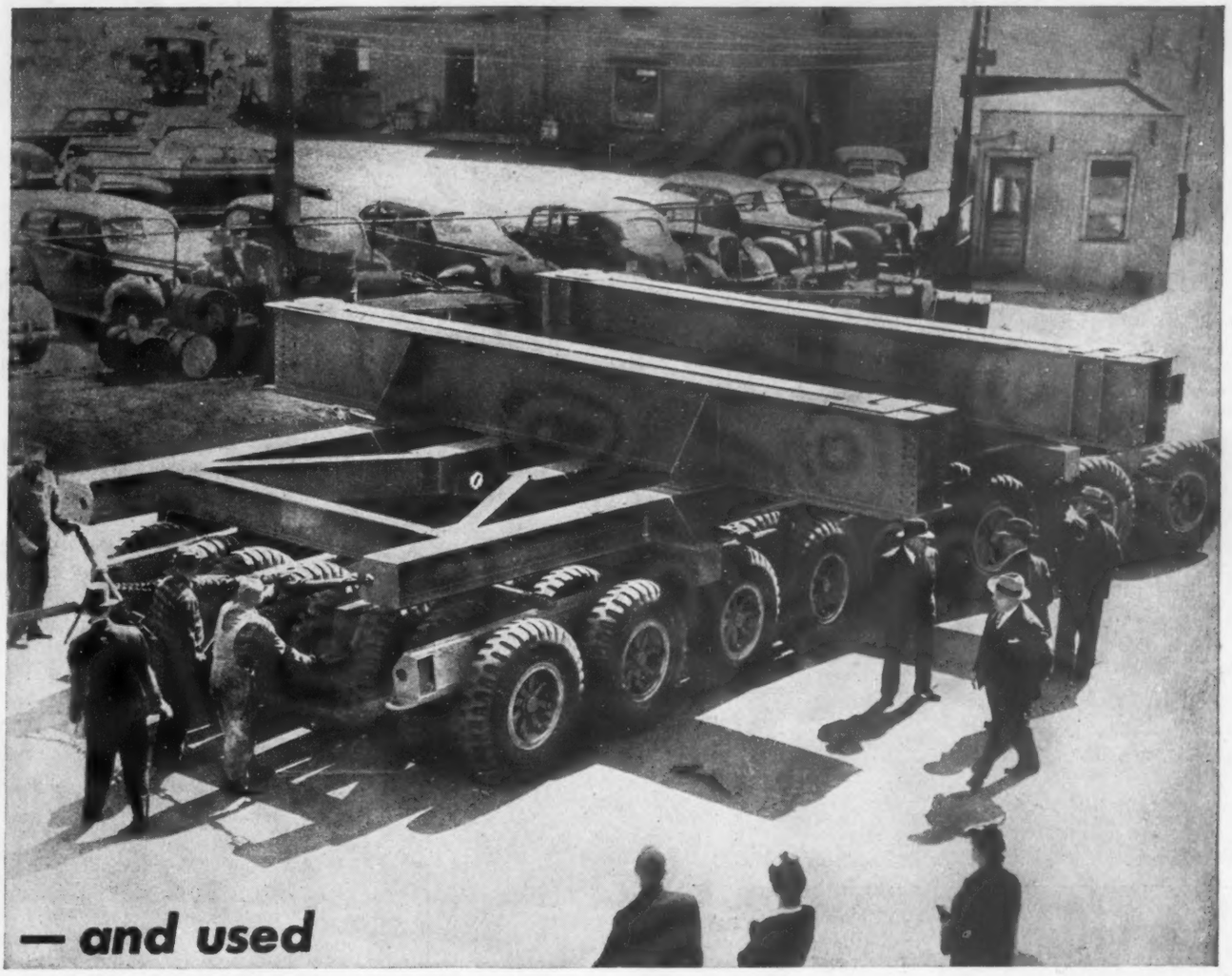
LOCTITE Fuse Wedges are used as standard on all 200-ampere and larger safety switches arranged for fuses.

EC&M Safety Switches are available in all standard sizes, in double, triple and four-pole design and for use on both alternating and direct current circuits. Bulletin 1300 gives complete details on design, ratings, dimensions, etc. Send for your copy to-day.

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79th STREET • CLEVELAND 4, OHIO

They built the World's Largest Trailer



Bethlehem's Mayari* R

*Mayari rhymes with "fiery". R denotes rust resistance.

This lumbering 64-wheel trailer was designed to carry the biggest load ever moved on pneumatic tires—300 tons. Pushed and pulled by Army tanks, the secret load was moved into a Western desert during the war. Its wheels shod with special rubber tires, the trailer is more than 39 ft. long, 17 ft. wide, and weighs 73 tons. Its speed, carrying the load on a rough, sandy road with tires inflated at 39 lb. pressure, is 3 m.p.h.

Engineers calculate that, traveling at 1 m.p.h. with tire pressure raised to 90 lb., the trailer could transport a 556-ton load over an improved road.

If you were designing so heavy and powerful a vehicle, what material would you specify? The builders of this one—Rogers Bros. Corp. of Albion, Pa.—had to save every possible pound of deadweight while obtaining necessary strength to move the load over soft sand. So they chose Mayari R, Bethlehem's low-alloy, high-strength steel. Deflection in Mayari R beams carrying the heavy load was only 3/32 in.

Readily fabricated, easily welded, Mayari R proved ideal for the job—as it does in a great variety of applications where extra strength and reduction in deadweight are important.

BETHLEHEM STEEL

Mayari R *makes it lighter... stronger... longer lasting*

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO U.S.A.

SHAPERS · SHEARS · BRAKES

Big Bends

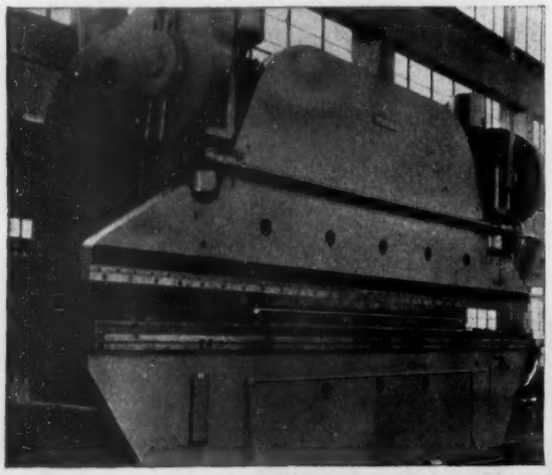
In the production of open cylindrical shells for pressure vessels and other containers, also heavy structural and machine members, 500 Series Cincinnati Press Brakes have the capacity for curving and bending these heavy plates.

Kinking the edge of heavy plate preliminary to rolling is another job where these large Cincinnati Press Brakes are effecting material savings.

If you have a "heavy plate" problem, the capacity, power and performance of a 500 Series Cincinnati Press Brake may solve it for you.

Write for engineering recommendations and Catalog B-2.

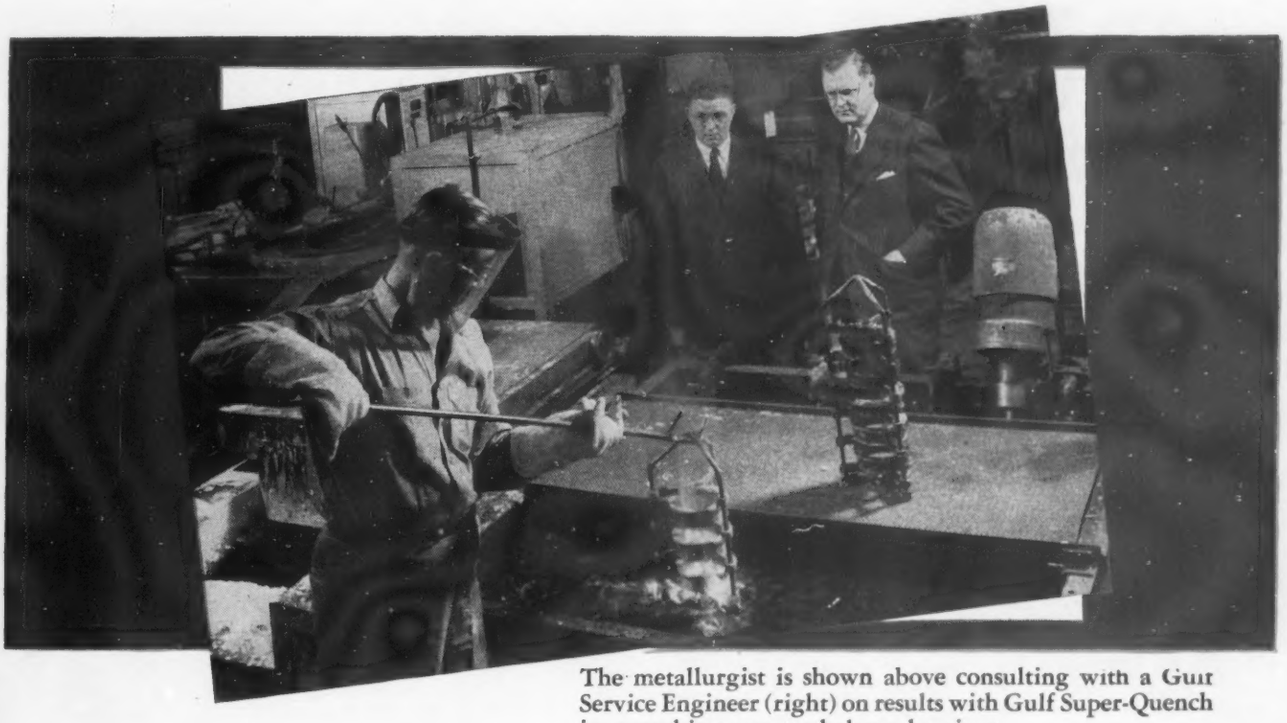
This 500 Series Cincinnati Press Brake has over twenty feet clearance between housings. Capacities: Twenty-five feet of ¾" plate or shorter lengths of 1½" plate as shown below.



Courtesy of Nordberg Manufacturing Co., Milwaukee, Wis.

"With Gulf Super-Quench we consistently get maximum hardening and no rejects for low hardness or distortion"

says this Metallurgist



The metallurgist is shown above consulting with a Gulf Service Engineer (right) on results with Gulf Super-Quench in quenching counter balance bearings.

"TO get correct case and core hardness and avoid distortion, the quench for our counter balance bearings has to be right," says this Metallurgist. "With Gulf Super-Quench we get just the results we want—maximum hardening on the case, and no rejects for low hardness or distortion."

Here's why Gulf Super-Quench is a superior quenching oil: It has intensified dual-action—a faster cooling rate through the hardening temperature range, and the slow speed of conventional quenching oil below the hardening temperature range. Call in a Gulf Service Engineer today and let him show you how Gulf Super-Quench can help improve your quenching practice. For your copy of the brochure on Gulf Super-Quench, send the coupon below.

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Please send me, without obligation, a copy of the brochure, "Gulf Super-Quench."

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Behind the Scenes . . .

It's New, It's Good

This week we jerk the wraps off a new department, leaving it naked and unshrouded before the withering gaze of you, our readers. It's a new gossip column in the machinery world, entitled "Seen and Heard in the Machinery Field," and it will be conducted by that old keyhole peeper among machinery fields, Guy Hubbard. Guy, who has up to now been our more or less staid Machine Tool Editor, (and of course he still remains unchanged in that position) has decided to put into print all the many short takes he's constantly hearing and seeing as he bats about the country, sleeping in hotel managers' offices and upper berths. We're offering him a verbal bouquet on the launching of his new baby (we were recently criticized for mixing our metaphors—how'd you like that one?) and wishing him smooth sailing, although we know that column conducting seldom has its moments of smooth sailing. And, in a side note to our reading public, we'll point out that Guy will welcome all contributions. Also—as an aside to any apprehensive machinery people—Guy says his New England conservatism hasn't deserted him—that he can still refrain from printing all he knows about you!

No House, No Home

Despite the heavy production mentioned in recent articles in STEEL the housing shortage isn't improving. Although we heard of a house for rent in southern California which was going begging—on account of the tenant had to take care of the owner's cow, horse, and 108 cats! And our local real estate man says things are getting so bad around our town that people have started sleeping in churches, no less. Probably praying all night for a home.

Author, Author

We were one of the first to publish in full the extremely complex scientific treatise on the Turbo-Encabulator. In fact, we have seen it several times in other papers since, including an almost complete abstract in TIME. However, we've not been blowing any horns about being the first to print this little gem of technical thought, largely because we couldn't give proper credit to the author. That's because we weren't able to find out who he was. Now comes Arthur D. Little Inc., the engineering firm up in Cambridge, Mass., whose research has apparently been more successful. They've discovered the author of the typewritten manuscripts which floated around this country during February is a British engineer, one J. H. Quick. Mr. Quick, who is a graduate member of the Institution of Electrical Engineers, London, wrote this scholarly masterpiece about the nofer trunnions and published it in the Institution's *Students' Quarterly Journal* in December, 1944. Since that time, it has crossed the ocean, created a mild sensation in scientific circles here, and now through the efforts of the Little people of Cambridge, the author is about to gain his well-earned greater glory. The gentleman, if you'll pardon the expression, is a Quick thinker, indeed.

It's Hot All Over

Gad, man, it's hot here under the steam pipes. One more day like this and the wood in our orange crate desk will start sprouting. We're not the worst, however. It's plenty hot out in them thar mills, too, as the following poem from the Niles plant of Sharon Steel Corp. will attest:

WAS IT HOT IN THE MILL TODAY?

As I trudged on my homeward way
After a hard day's work in the mill,
A friend hailed me from across the way
And said, "Hey, pal, was it hot in the mill today?"

Tired, sick, foot-weary and sore,
Such talk as this I vowed I would stand no more.
I said, "Why, no, man, what makes you ask?
I worked all day in my overcoat, gloves, and big fur hat.

"The roller on Number One has frosted his feet,
The finisher has frozen his ears,
The scrap boy has pneumonia
From working in back of the shears.

"They pulled a pack on Number Two
And gave it the matching pass.
The surface sheet was caked with ice
As smooth as a sheet of glass.

"They pulled a pack on Number Three—
When it got to the mill it was cold.
The water was frozen on the soft mill
And the rolls refused to go.

"While all along the standing
Was two feet deep with snow,
And icicles hung in the furnace door
That reached clear down to the floor.

"I say, are you going skating?
If not, come along in my sleigh.
But whatever made you ask, Pal,
Was it hot in the mill today?"

Shrdlu

(Editorial Index—page 59)

STEEL

Vol. 119—No. 2 July 8, 1946

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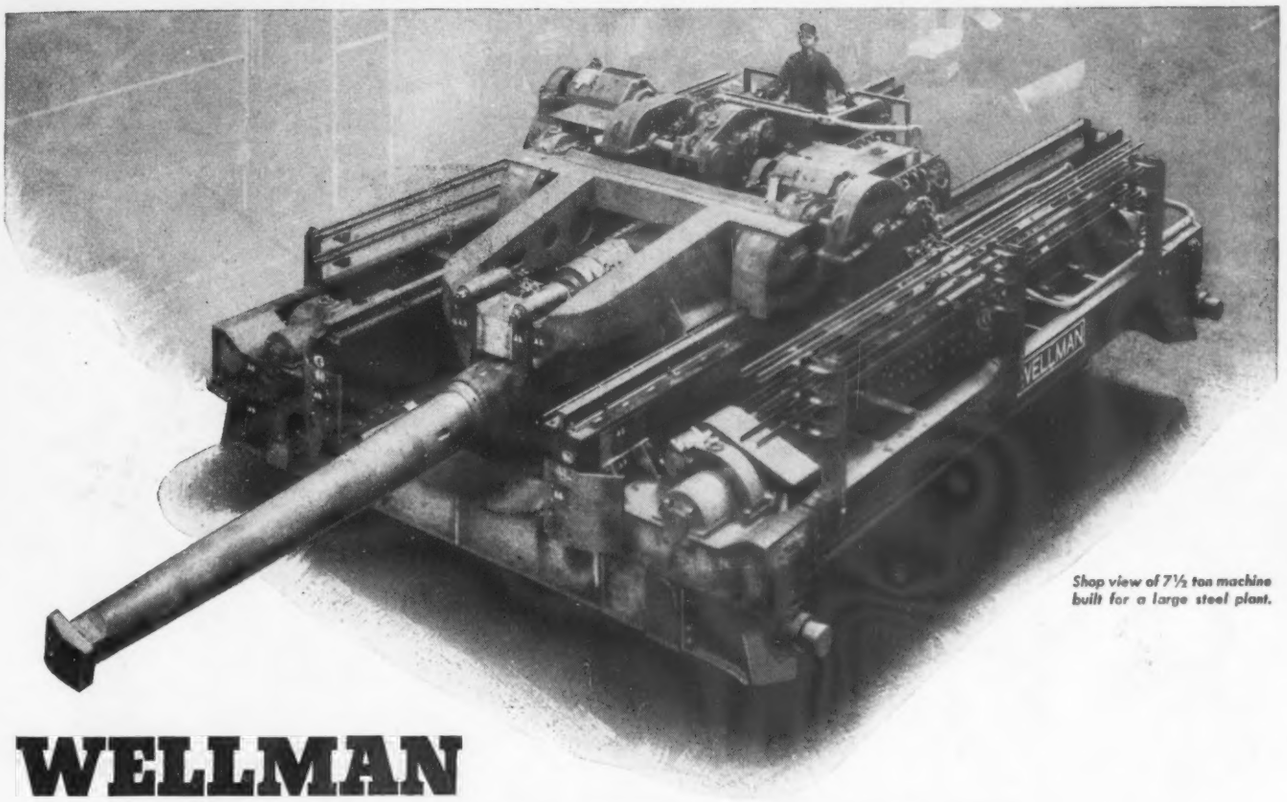
Editorial Staff on Contents Page

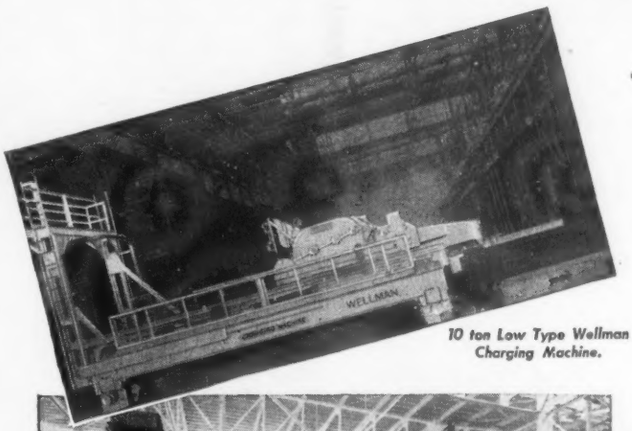


Shop view of 7½ ton machine built for a large steel plant.

WELLMAN

MANUFACTURES THE MOST COMPLETE LINE OF

CHARGING MACHINES



10 ton Low Type Wellman Charging Machine.

5 ton High Type Wellman Charging Machine.

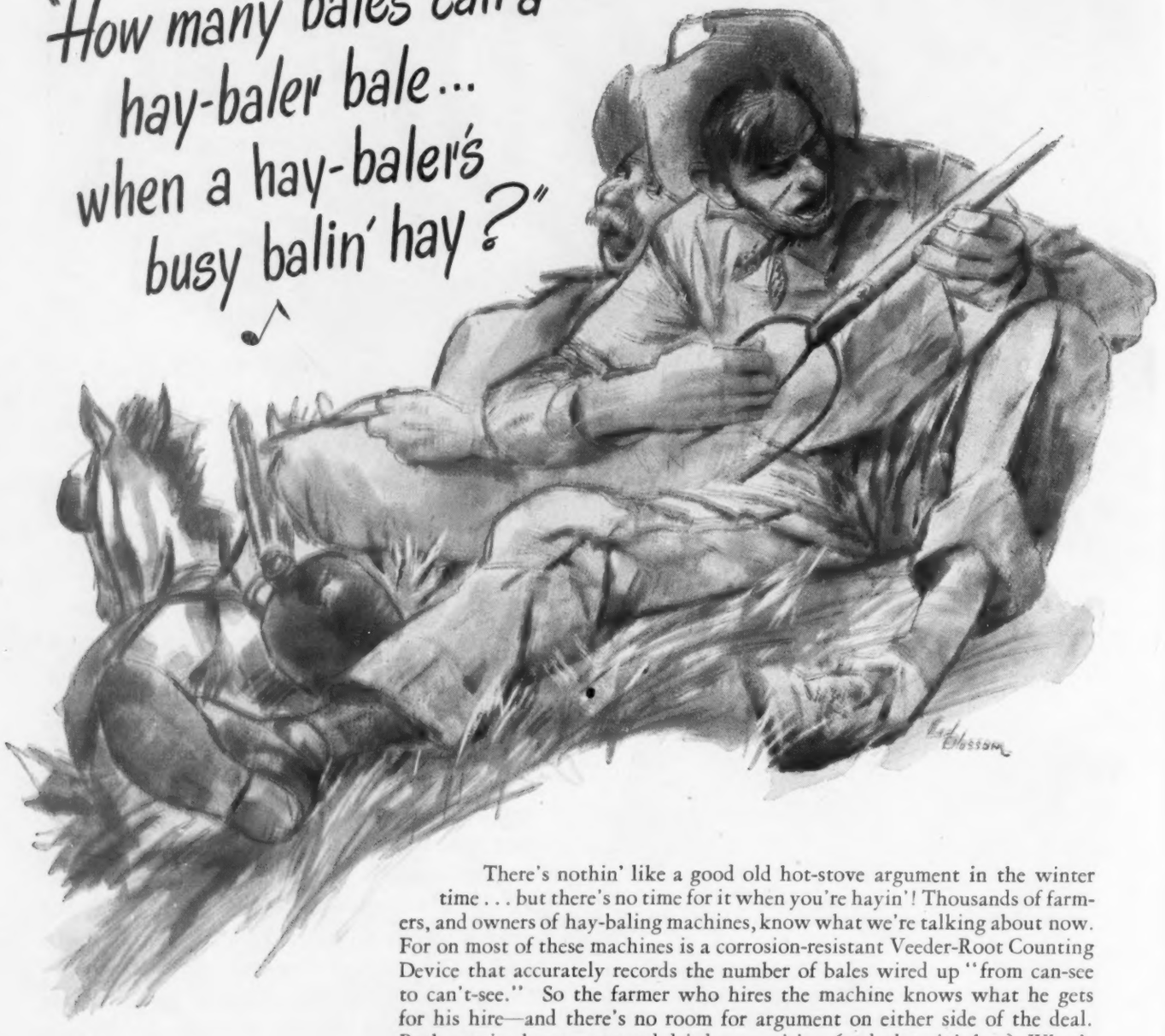
Wellman originated the labor saving, mechanical charging of open hearth furnaces and now makes most complete line of improved, modern chargers. Some features: one-piece furnace annealed cast steel trolley frame . . . air tight gear cases . . . modern roller bearing design (optional) . . . bridge framework with main and auxiliary girders. Wellman makes Low Type (5, 7½, 10 and 12 ton) High Type (5 ton) Crane and Revolving Types, also charging machines for heating furnaces, and manipulators for forging presses and hammers.

WELLMAN WILL BUILD IT!

Car Dumpers • Coke Pushers
Clamshell Ore Buckets
Ore Bridges • Mine Hoists
Gas Producers • Soaking Pits
Skip Hoists • Wharf Cranes

THE WELLMAN ENGINEERING COMPANY
Cleveland 4, Ohio

"How many bales can a hay-baler bale... when a hay-baler's busy balin' hay?"



There's nothin' like a good old hot-stove argument in the winter time . . . but there's no time for it when you're hayin'! Thousands of farmers, and owners of hay-baling machines, know what we're talking about now. For on most of these machines is a corrosion-resistant Veeder-Root Counting Device that accurately records the number of bales wired up "from can-see to can't-see." So the farmer who hires the machine knows what he gets for his hire—and there's no room for argument on either side of the deal. Both parties have a cut-and-dried proposition (and *that* ain't hay). What's more, there's no problem with time-checking, or figuring out-of-service time.

Many types of farm equipment, from tractors to fruit-sorters and canning machines, have built-in Veeder-Root *Count*rol in many different forms, provided by many different types of Veeder-Root Devices. *Your* equipment, too, can profit you more if it has this added utility . . . this proof of performance and guarantee . . . this protection against all the errors that creep in where there's guesswork. Write, and find out what *Count*rol can do for *you*.

The Counting Houses of Industry

VEEDER-ROOT INC.

Hartford 2, Connecticut

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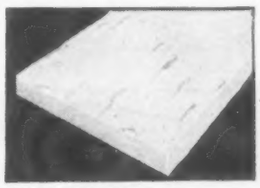
***In England*: Veeder-Root Ltd. (New address on request)**

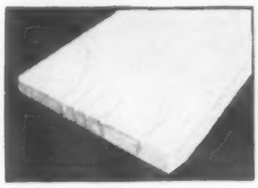
JESSOP

STAINLESS CLAD

*Steel**



CANNOT CHIP



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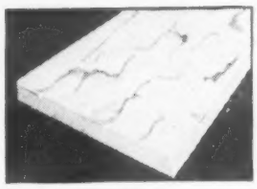


CANNOT FLAKE

CANNOT PIT

AND *Successfully* RESISTS { ABRASION • HEAT
MOISTURE • CORROSION
And Other Mechanical
And Chemical Abuse

Jessop Stainless-Clad Steel affords COMPLETE and PERMANENT protection against physical and chemical action of many descriptions. The stainless surface is not a "coating" or "lining" but is an integral part of the composite metal. For this reason it can never be separated from the mild steel base. Jessop Stainless-Clad Steel gives maximum protection plus durability obtainable only from a metal surface. Degree of stainless cladding can be varied from 5 to 50%, depending upon the application and the gauge of material. If you **use** equipment subject to corrosion, Jessop Stainless-Clad Steel will protect your investment for years. If you **make** such equipment, it will add materially to the sales value of your product. In any case, investigate the multiple advantages of Jessop Stainless-Clad Steel without delay.

*U. S. Pat. Nos. 1,997,538; 2,044,742; 2,147,407; and 2,225,868. Can. Pat. No. 383,153.

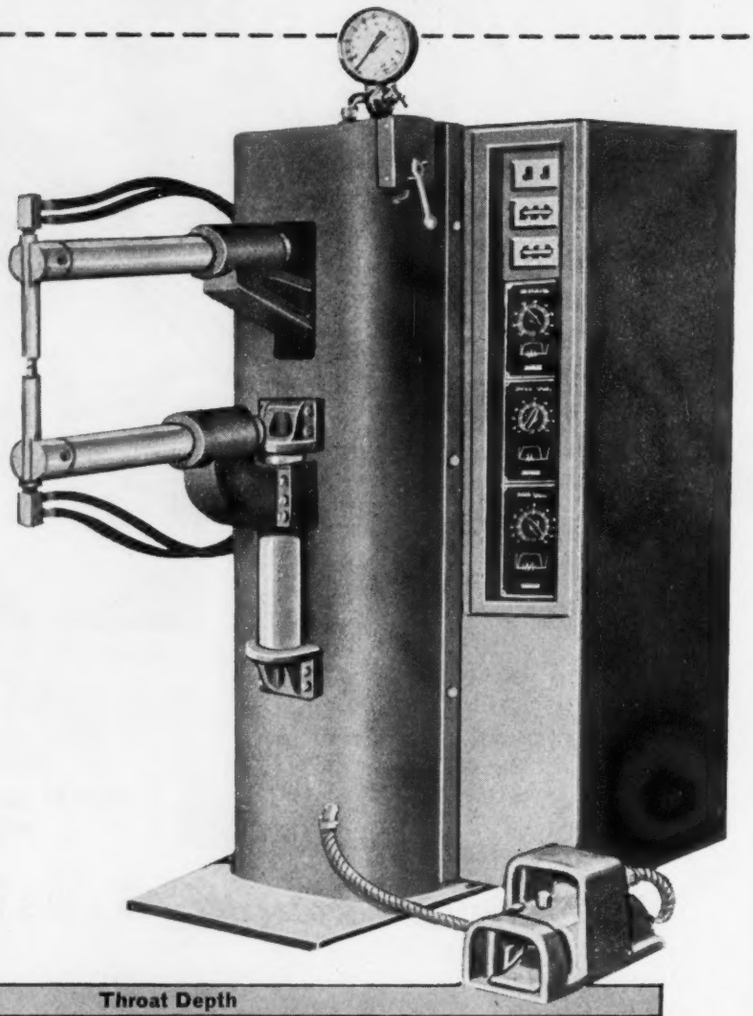
JESSOP STEEL COMPANY • SPECIALTY STEELS •

JESSOP STEEL CO.

WASHINGTON, PA.

Now Available in { 5 TRANSFORMER SIZES / 5 THROAT DEPTHS

Series PMCRO
ROCKER ARM SPOTWELDER



Popularity has demanded it! The versatility of this precision welder has been increased by providing a choice of 5 power ratings and 5 arm lengths. You can now choose a machine *tailored* to your fabricating problems—yet *low in price.*

Features usually found only on larger welders are incorporated. Operation is entirely automatic with electronic controls mounted in hinged cabinet convenient to operator. Air-operated rocker arm is provided with retraction stroke and moves on heavy duty roller bearings. Write for bulletin 112-D.

The chart below gives maximum capacities on clean, mild steel under the various KVA and throat depth conditions. Minimum weldable gauge is 28. (U. S. Standard)

Transformer Rating	Throat Depth				
	12"	18"	24"	30"	36"
20 KVA	16 Gauge	18 Gauge	19 Gauge	22 Gauge	Not Supplied
30 KVA	14 Gauge	16 Gauge	18 Gauge	19 Gauge	22 Gauge
40 KVA	13 Gauge	14 Gauge	16 Gauge	18 Gauge	19 Gauge
50 KVA	12 Gauge	13 Gauge	14 Gauge	16 Gauge	18 Gauge
75 KVA	11 Gauge	12 Gauge	13 Gauge	14 Gauge	16 Gauge

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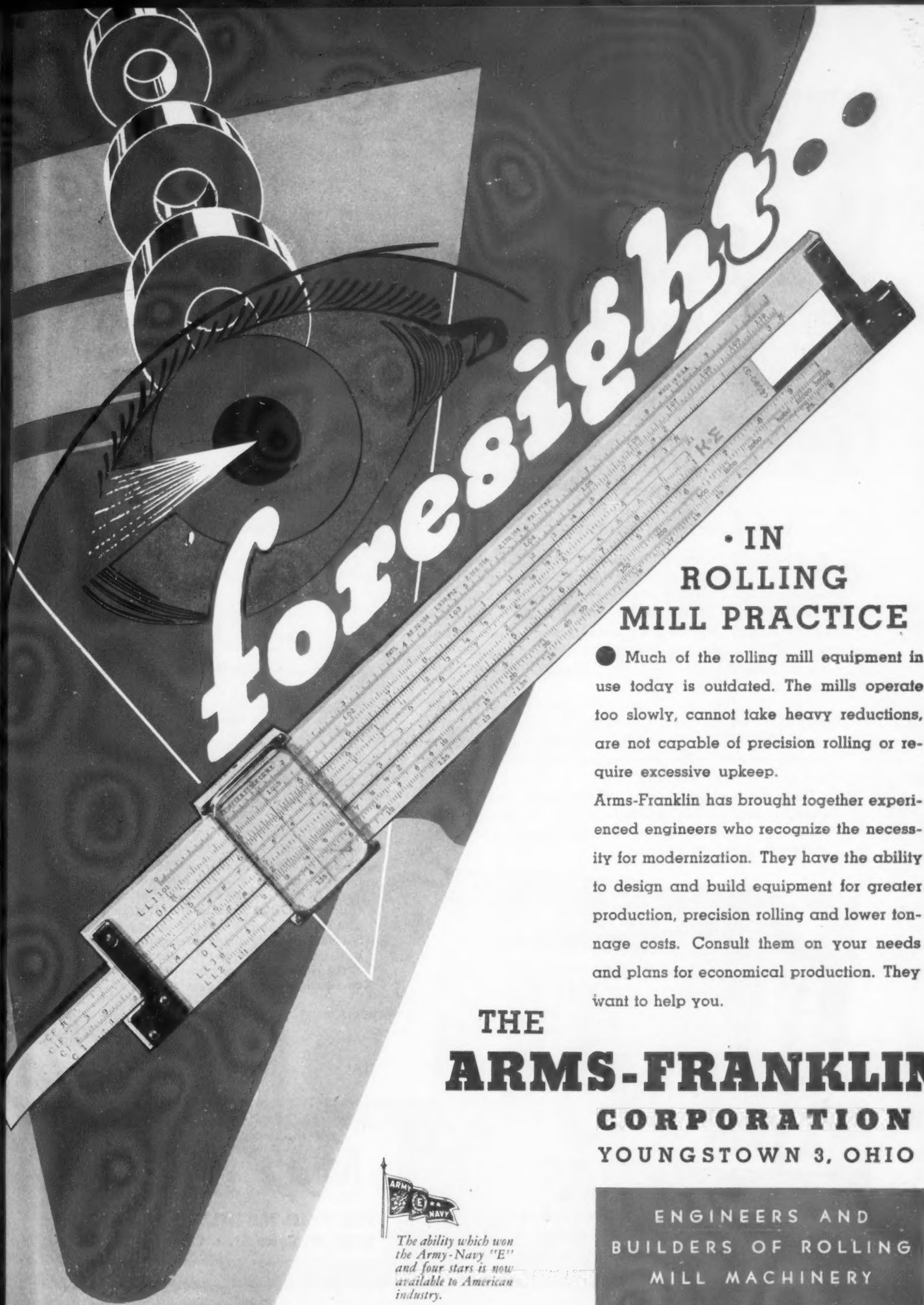
4927 W. 67th ST., CHICAGO 38, ILL.



· IN ROLLING MILL PRACTICE

● Much of the rolling mill equipment in use today is outdated. The mills operate too slowly, cannot take heavy reductions, are not capable of precision rolling or require excessive upkeep.

Arms-Franklin has brought together experienced engineers who recognize the necessity for modernization. They have the ability to design and build equipment for greater production, precision rolling and lower tonnage costs. Consult them on your needs and plans for economical production. They want to help you.

THE ARMS-FRANKLIN CORPORATION

YOUNGSTOWN 3, OHIO

The ability which won the Army-Navy "E" and four stars is now available to American industry.

ENGINEERS AND BUILDERS OF ROLLING MILL MACHINERY

Affiliated with

TAYLOR-WILSON Mfg. Co., Pittsburgh, Pa.
Manufacturers of Tube Mill Machinery

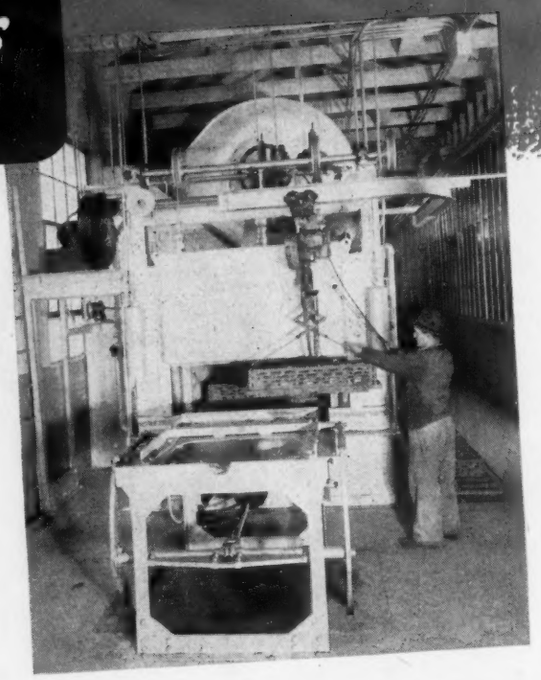
Building
INDUSTRIAL OVENS and FURNACES
for 53 years

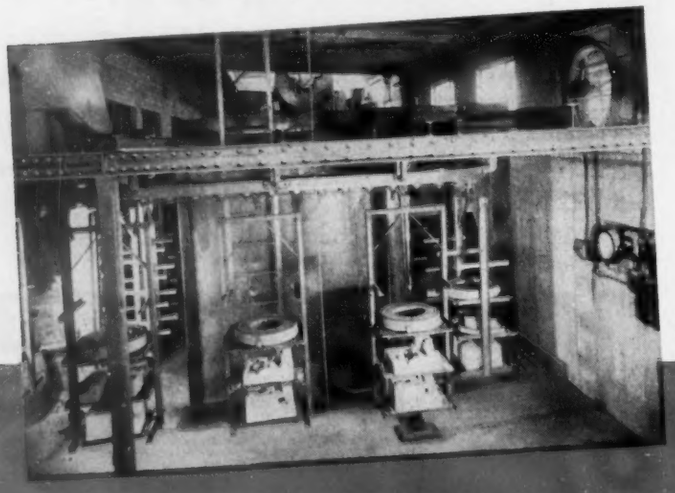
. . . has been our business

MAEHLER'S leadership in developing the recirculating air heat system for industrial ovens and furnaces has been recognized throughout industry for many years. The Paul Maehler Company has pioneered in this type of heating, the result of 53 years of experience which spans all of the methods from a coal stove in an oven serving bicycle refinishers to the complex systems of the present day.

Tests show that Maehler-engineered recirculating air-heat furnaces maintain temperature uniformity that is *virtually perfect!* This kind of temperature control assures the user of lower operating costs, greater production and more satisfactory results.

Regardless of what your requirements are . . . heat treating, core baking, enameling, etc. . . . Maehler engineers can help you design an oven, furnace or complete system to meet your needs.



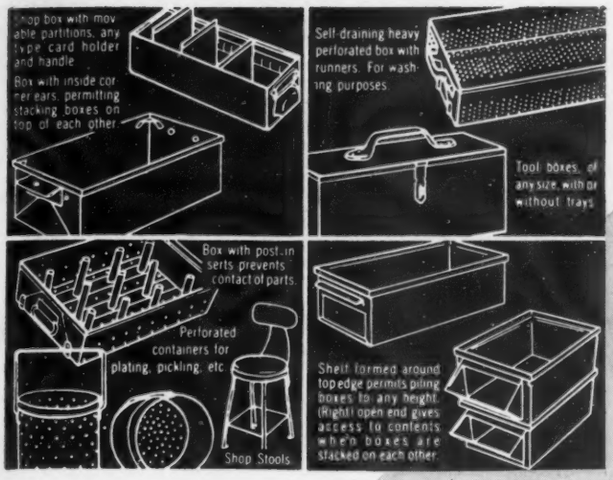


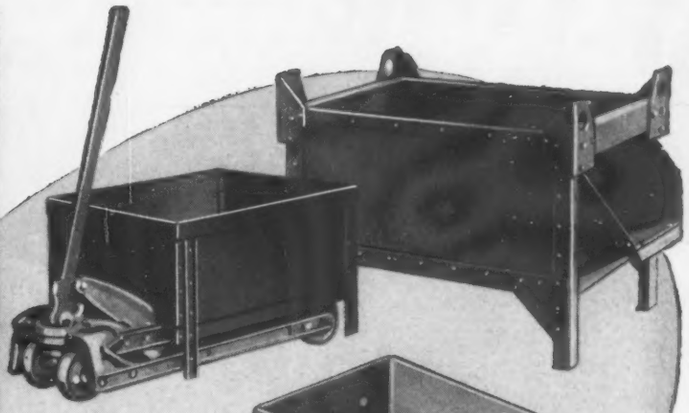
These two photos show typical Maehler installations. The one above is a Maehler air-draw furnace at Chambers, Bering Quinlan Co. It is used to anneal gray iron castings. The installation at the left is a Maehler continuous monoveyer core baking oven, with Palmer-Bee conveyor, at the Howard Foundry Company. The cores are baked 2½ hours at 450° F.

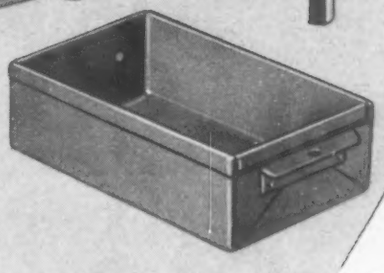
Industrial Ovens and Furnaces for Core Baking, Mold Drying, Heat Treating, Enameling, etc.

MAEHLER

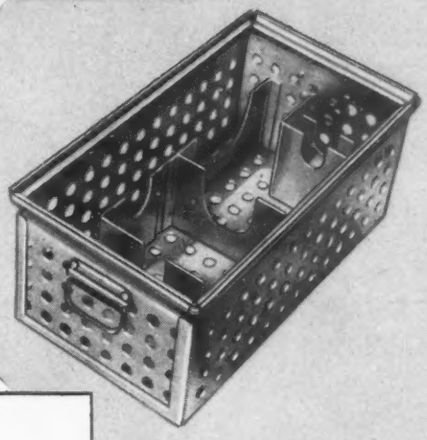
THE PAUL MAEHLER COMPANY
2208 W. Lake St. • Chicago 22, Ill.


Shop box with movable partitions, any type card holder and handle
Box with inside corner ears, permitting stacking boxes on top of each other
Self-draining heavy perforated box with runners. For washing purposes.
Tool boxes, of any size, with or without trays
Box with post-in serts prevents contact of parts.
Perforated containers for plating, pickling, etc
Shop Stools
Shelf formed around top edge permits piling boxes to any height. (Right) open end gives access to contents when boxes are stacked on each other

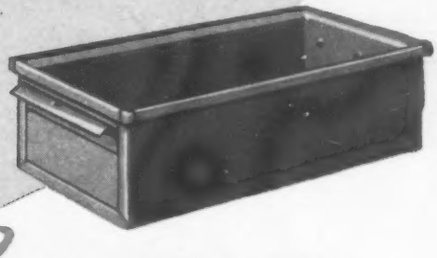




Steel Piling Box **with fixed or removable partition designed to hold one set of parts needed for any given assembly or sub-assembly. Big time-saver.**



Stacking or Piling Box **of excellent design, strong and durable. Any size, to suit your needs. Above: Triple Hem Shop Box made with straight or tapered sides**



Shop Barrels, **any style or size, built for long life and hard service.**

Shop Stools **with steel, solid wood or laminated wood seats. Sturdy reinforced legs, of any desired height.**

Comfortable Back Rests **of several different designs, may be had at a slight extra cost.**

TO KEEP PRODUCTION *flowing smoothly*

Where small, loose products are used or produced, perfecting the materials handling system is often the most important factor in attaining lower production cost. An essential part of the system is properly designed, light and strong metal shop containers for the pickup, collection, and conveyance of materials to and from machines, finishing, assembly, packaging and storage.

Cleveland shop boxes, barrels, cans, pans and pails are usually custom-made, because the small extra first cost is trifling compared with the advantages gained, year in and year out, by having containers of exactly the right size, shape and design to fit individual needs and special handling requirements.

Catalog, prices, and design service on request, without cost or obligation.

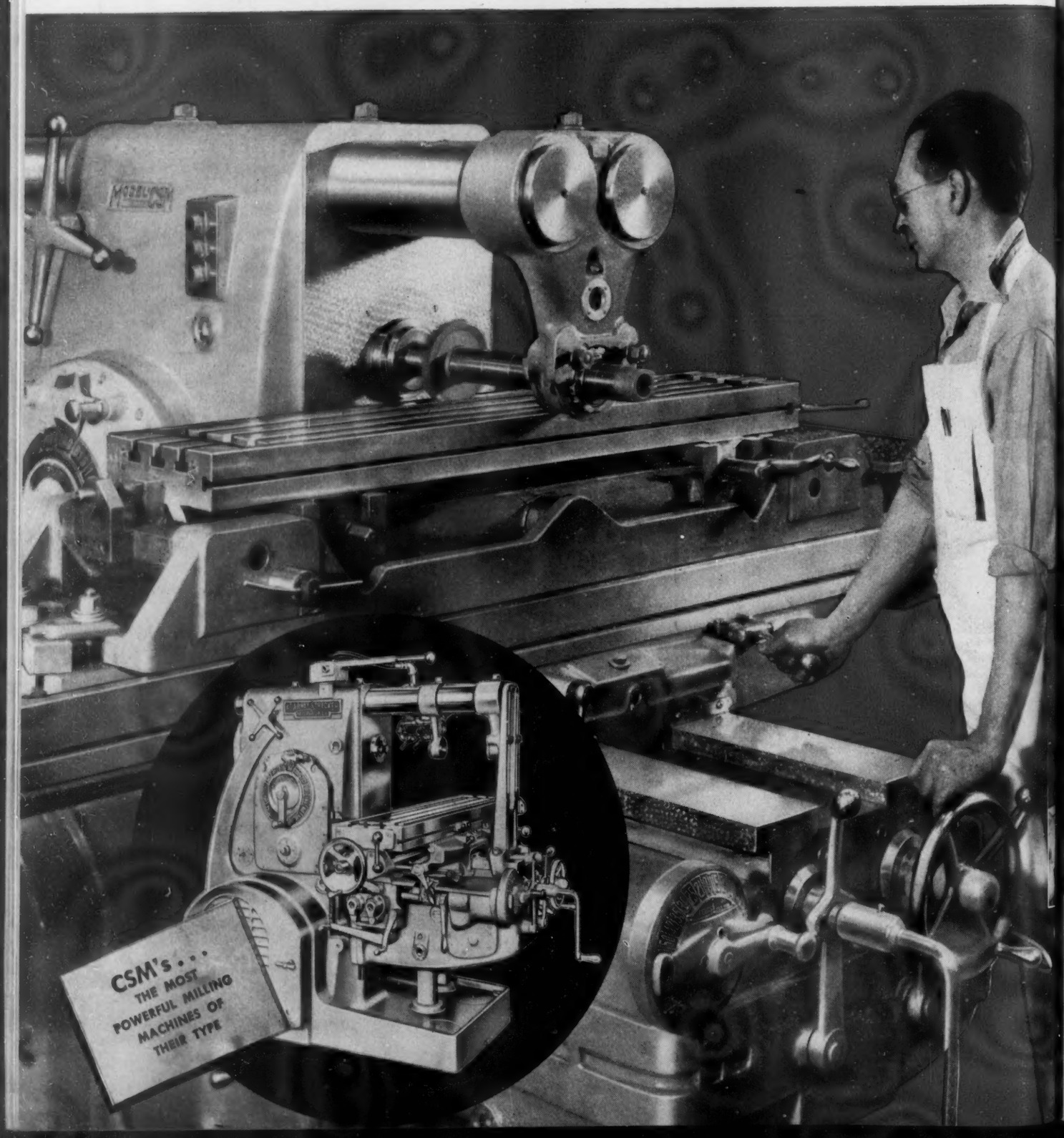
SHOP EQUIPMENT DIVISION
Cleveland Wire Spring Co.
5250 BROOKPARK RD.•CLEVELAND 9, OHIO

Cleveland **STEEL SHOP EQUIPMENT**
CLEVELAND WIRE SPRING CO.
2012 West 25th Street, Cleveland 13, Ohio
Subsidiary: Reynolds Spring Company, Jackson, Mich.

MILLING CAST IRON

BUTT

on a Standard



FAST!

Kearney & Trecker CSM

Kearney & Trecker CSM's are expressly designed for the the most efficient use of Carbide Cutters on ferrous and non-ferrous metals.

On this job, because of the size of the workpiece and fixture — we selected a 50 h.p. CSM plain model — and equipped with the proper cutter, it zipped through the cast iron workpiece easily and speedily. The details of the operation are given below:

OPERATION: Mill coolant trough
WORK PIECE: Milling machine table
MATERIAL: Close-grain, high-tensile cast iron
CUTTER: 6" dia., 10 tooth, carbide tipped slotting
CUTTER SPEED: 180 RPM
TABLE FEED: 21 IPM
DEPTH OF CUT: ¾" to 1¾" (3/32" — ¼" each side)
METAL REMOVAL RATE: 15 cu. in. per minute at maximum depth of cut.

NOTE the special fixture which provides maximum rigidity coupled with quick change set-ups on the workpiece and especially facilitates the loading and unloading of the workpiece on the machine.

• • •

CSM Milling Machines were designed to obtain the greatest benefits from modern cutting tools, and are now part of our line of standard models. The design has been developed after complete analyses of industry's problems of milling with carbide cutters.

Because they are knee type machines, they are readily adaptable to a great variety of work. They are precision built in accordance with long established Kearney & Trecker standards, and will cut metals faster and to finer tolerances and superior finishes than ever before, with high speed steel cutters as well as carbide cutters.

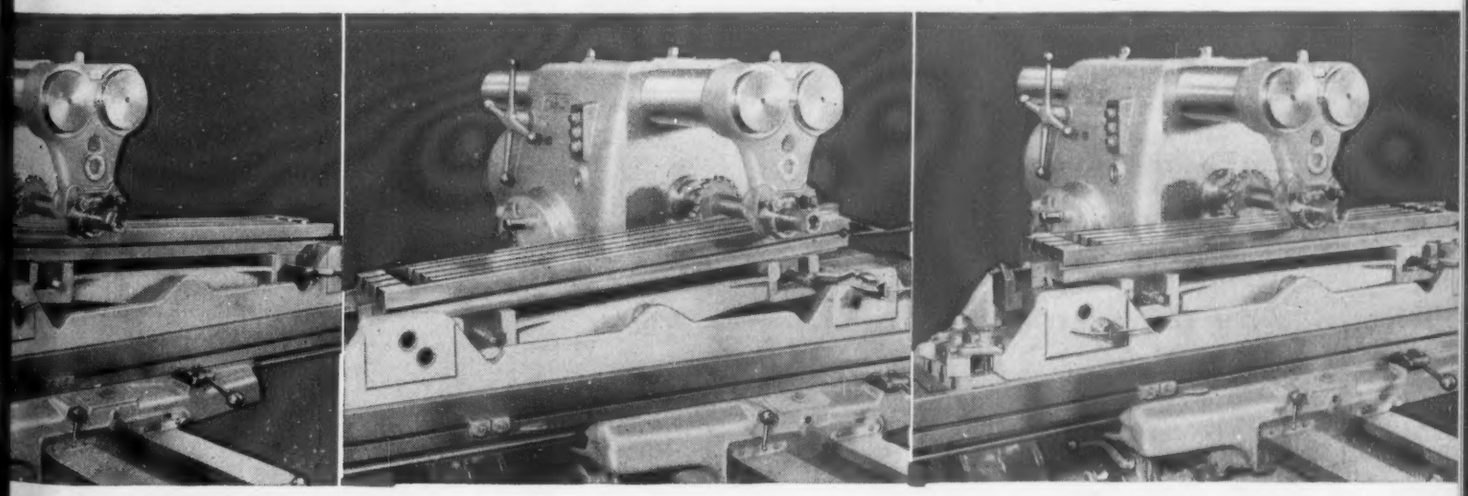
CSM machines are available in 20, 30 or 50 H.P. models in both plain and vertical knee types.

Write for complete data on CSM machines — CATALOG CSM-20. Please indicate your business connection.

Operation 1 . . .
Workpiece tilted to right in fixture. Angular coolant channel is climb milled. Maximum depth of cut: 1¾".

Operation 2 . . .
Workpiece tilted to left in fixture. Angular coolant channel conventional milled. Maximum depth of cut: 1¾".

Operation 3 . . .
Workpiece held in horizontal position in fixture. The two angular channels now blended by climb milling.

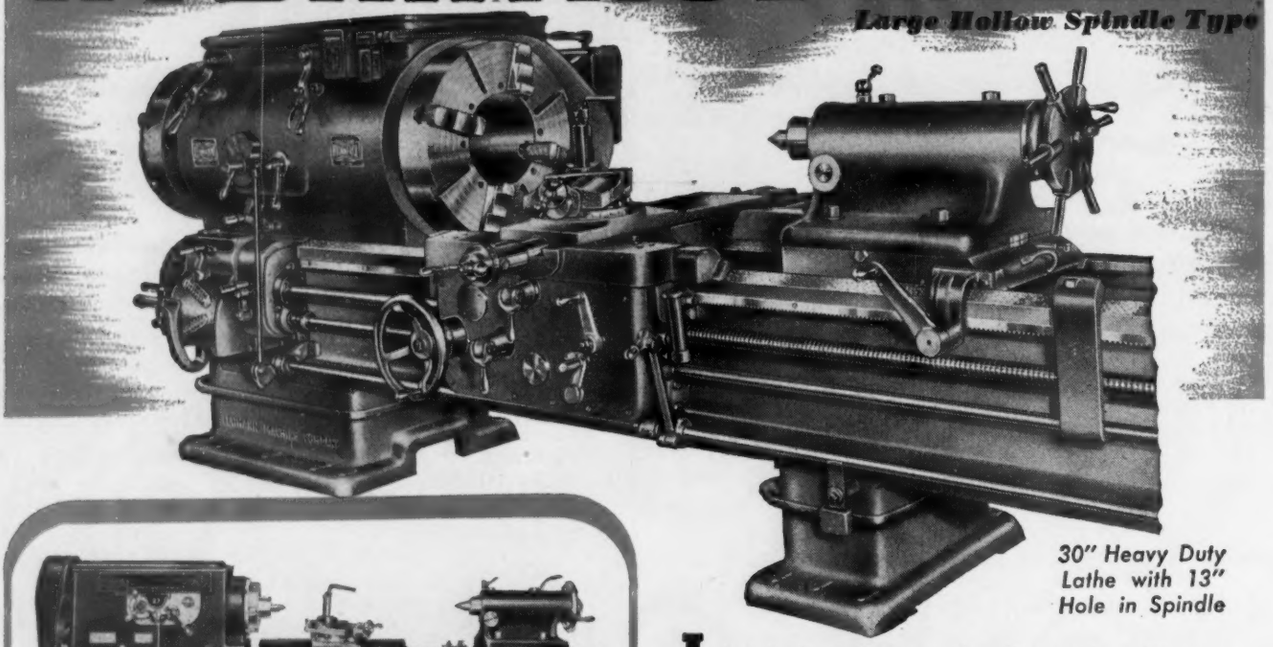


KEARNEY & TRECKER CORPORATION
MILWAUKEE 14, WISCONSIN

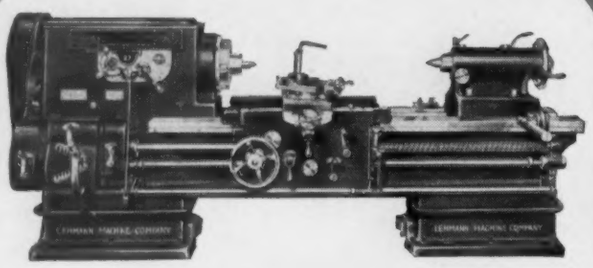
BE READY FOR TOMORROW . . . WITH CSM'S

Do it Better!... on a HYDRATROL LATHE

Large Hollow Spindle Type



30" Heavy Duty Lathe with 13" Hole in Spindle



Standard Type, Heavy Duty HYDRATROL LATHES, 20" to 36"

The big 27" size, shown above, has all the ruggedness and power for the heaviest possible work. And its many refinements in design and construction result in an ease of operation comparable to small machines.

In hundreds of plants—under all sorts of conditions—LEHMANN HYDRATROL LATHES have invariably brought about faster production, better work, lower costs.

Look around your own shop—you may find a number of machining jobs which possibly could be done better on a Large Hollow Spindle Type of HYDRATROL LATHE. Send us prints of these unusual, difficult, or too-costly machining jobs, for a specific, time-and-money-saving recommendation.

Five Sizes - 18" to 36"

Small	**18" up to 7⅛" Hole**
Medium	**24" up to 12⅛" Hole**
Large	**27" up to 13⅛" Hole**
Large	**30" up to 14⅛" Hole**
Large	**36" up to 16½" Hole**

(Standard type lathes, 16" to 36")

Lehmann MACHINE COMPANY

CHOUTEAU AT GRAND • • • ST. LOUIS 3, MISSOURI

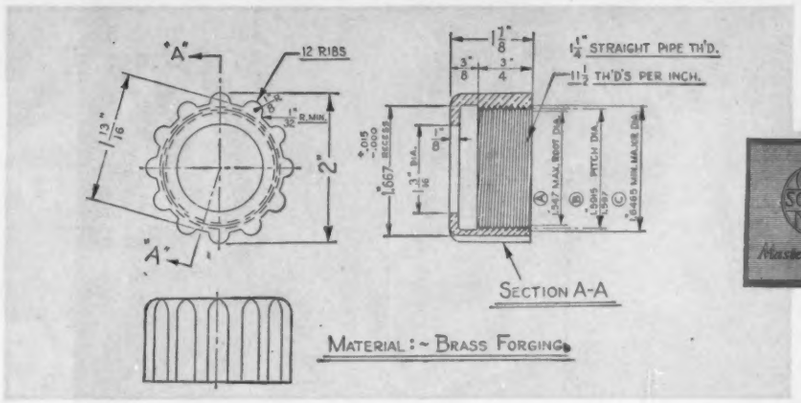
Scovill
NON-FERROUS
FORGINGS

When SCOVILL becomes your METAL-PARTner...

MACHINED FORGINGS AT LOWER COST THAN BY PRESENT PRODUCTION METHODS MAY BE POSSIBLE

Originally, this brass packing nut was a screw machine item, requiring 1168 lbs. of special shape rod per thousand pieces. By changing to forging, Scovill cut down the amount of metal to 619 lbs. per thousand — a two-way saving, because of the lower cost of the forging rod.

But Scovill economy is concerned not only with savings in materials. Our modern machining equipment also saves time in the production of forgings. The net over-all saving in this particular case was about 75 per cent.

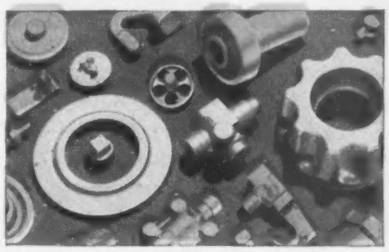


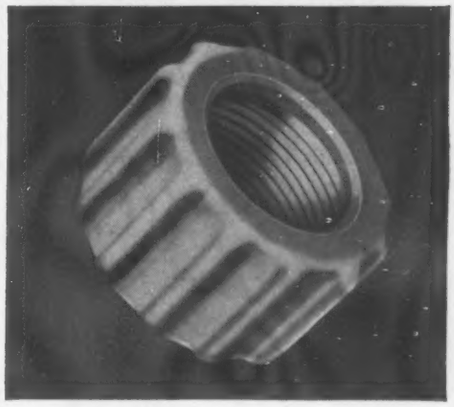
Are you completely satisfied with the brass, aluminum or other non-ferrous metal parts you're now using? If you think there's room for improvement in their design, quality or cost, it would be a smart move to put your problems up to Scovill. Our long and varied experience in non-ferrous forgings has aided many manufacturers by providing them with either better products or lower costs. Let us put that experience to work for *you.*

GET THE FACTS

We'll be glad to send full details on how you can benefit by making Scovill *your* METAL-PART*ner.* Just fill in the coupon below and mail it today.

Scovill Manufacturing Company, Waterbury 91, Conn. *Export Department:* 405 Lexington Ave., New York 17, N. Y.





Please send me information about your metal-working facilities. I am interested in non-ferrous forgings for the applications checked:

- ☐ Aircraft
- ☐ Automobiles
- ☐ Band Instruments
- ☐ Blow Torches
- ☐ Cameras
- ☐ Communication Equipment
- ☐ Compressed Gas Cylinders
- ☐ Fire Extinguishers
- ☐ Household Appliances
- ☐ Industrial Instruments
- ☐ Plumbing Goods
- ☐ Pumps
- ☐ Valves
- ☐ Welding Equipment

Other applications.....

.....

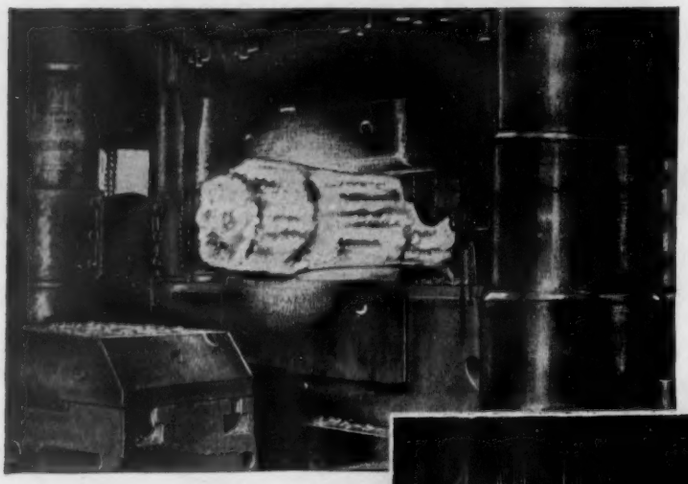
SCOVILL MANUFACTURING COMPANY
Forgings Division
20 Mill Street
Waterbury 91, Connecticut

Name .....

Company .....

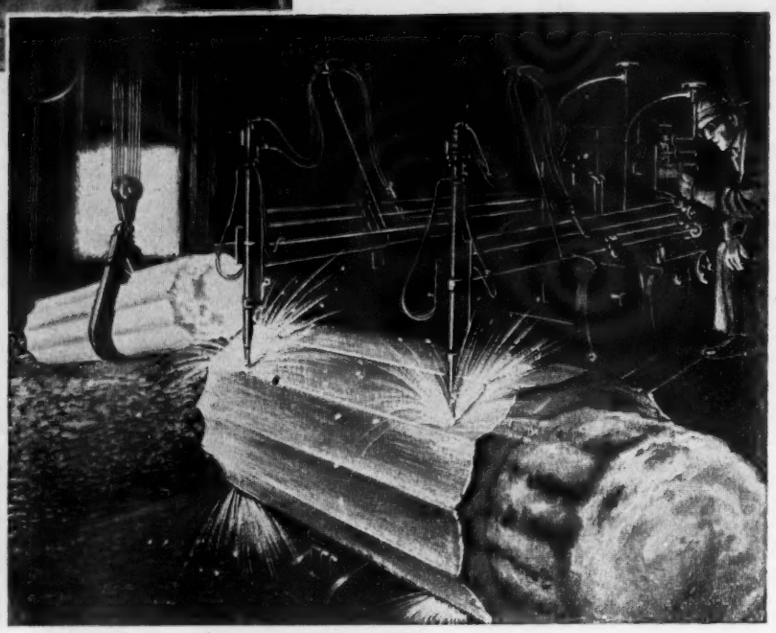
Address .....

STILL LOOKING INTO THE FUTURE



YESTERDAY...

"Press Cropping" Ingots Was Advanced Technique. Until just recently, steel men used this method to crop or trim ingots preparatory to forging.



TODAY...

It's "Flame Cropping"! Now, hot tops and bottoms of large fluted ingots of even the toughest alloy steels are quickly and neatly cropped in one operation by an ingenious flame cropping machine. Developed by Airco as a service to the steel industry, this machine cuts operating time from hours to minutes...slashes costs . . . helps meet today's demands for high standards of quality.

and TOMORROW...?

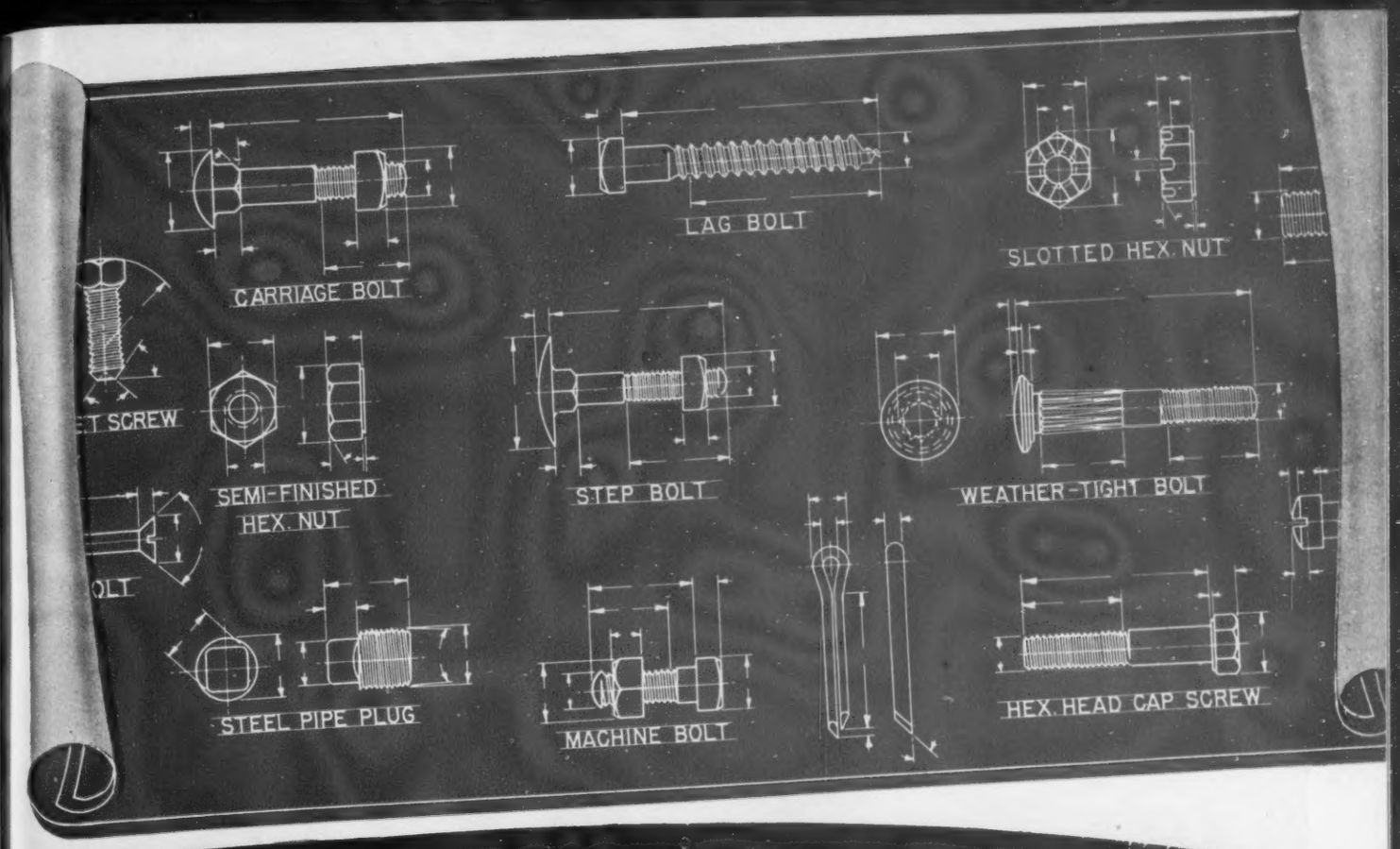
Airco's research and development staff will continue to contribute to new and better ways of steel production with the same foresightedness that has always characterized their efforts to provide new tools for industry.

Airco's Technical Sales Division is at the call of steel men in applying Airco processes in the solution of their problems. For additional information, get in touch with your nearest Airco office or write: Air Reduction, 60 E. 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas.

AIRCO **AIR REDUCTION**

Offices in All Principal Cities

ORIGINATORS OF MODERN OXYACETYLENE METHODS FOR THE STEEL INDUSTRY



FOR QUICKEST DELIVERY AND LOWEST COST

...specify "standard" bolts and nuts

MORE than 400,000 *standard* headed and threaded fastenings are made by bolt manufacturers. Thousands of these standard products are always in stock, and those not in stock can be produced quickly.

We also make "specials" to your order, *when you really need* a "special".

But we frequently receive blueprints of special bolts or headed and threaded products which so closely resemble *standard* products we make, that we feel compelled to call this to our customers' attention. All "specials" require both special tools and dies, and special operations—as well as special routing, handling, inspection and even packing—all along the line. This results invariably in higher production costs and slower shipments.

Now, especially, production time saved means money saved—and deliveries of fastenings as well as other component parts should not hold up your production. Now, especially, your production costs must be kept low to insure a reasonable profit on manufacturing.

Do not hesitate to ask for the services of Lamson engineers. *They are trained* to help you determine which *standard* bolt and nut products will fit into the design of *your product* most efficiently and economically. *They are experienced* in having done this for our customers many times before with tangible advantages that our customers appreciate. Ask a Lamson engineer to call to talk it over.

THE LAMSON & SESSIONS COMPANY, 1971 W. 85th St., Cleveland 2, Ohio

Plants at Cleveland and Kent, Ohio; Chicago and Birmingham

HERE'S A COUPON FOR YOUR CONVENIENCE

THE LAMSON & SESSIONS COMPANY • 1971 West 85th Street • Cleveland 2, Ohio

☐ **"THE LAMSON BLUE BOOK"**—is our standard catalog of standard products excepting our aircraft products. *Sent gratis on request*

☐ **"BOLTS, NUTS AND SCREWS"**—1944 Revision. Cloth bound. Limited edition, 180 pages of technical, practical information. Sent prepaid for $1.00—*check or cash must accompany your order.*

Authentic engineering data, charts, tables in one cloth-bound 169 page volume, **"BOLT, NUT AND RIVET STANDARDS,"** may be obtained from the publishers, American Institute of Bolt, Nut and Rivet Manufacturers, 1553 Hanna Building, Cleveland, Ohio for $1.00, prepaid, if remittance accompanies your order.

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Company _____

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LAMSON & SESSIONS

Ask your Jobber for the Lamson Line

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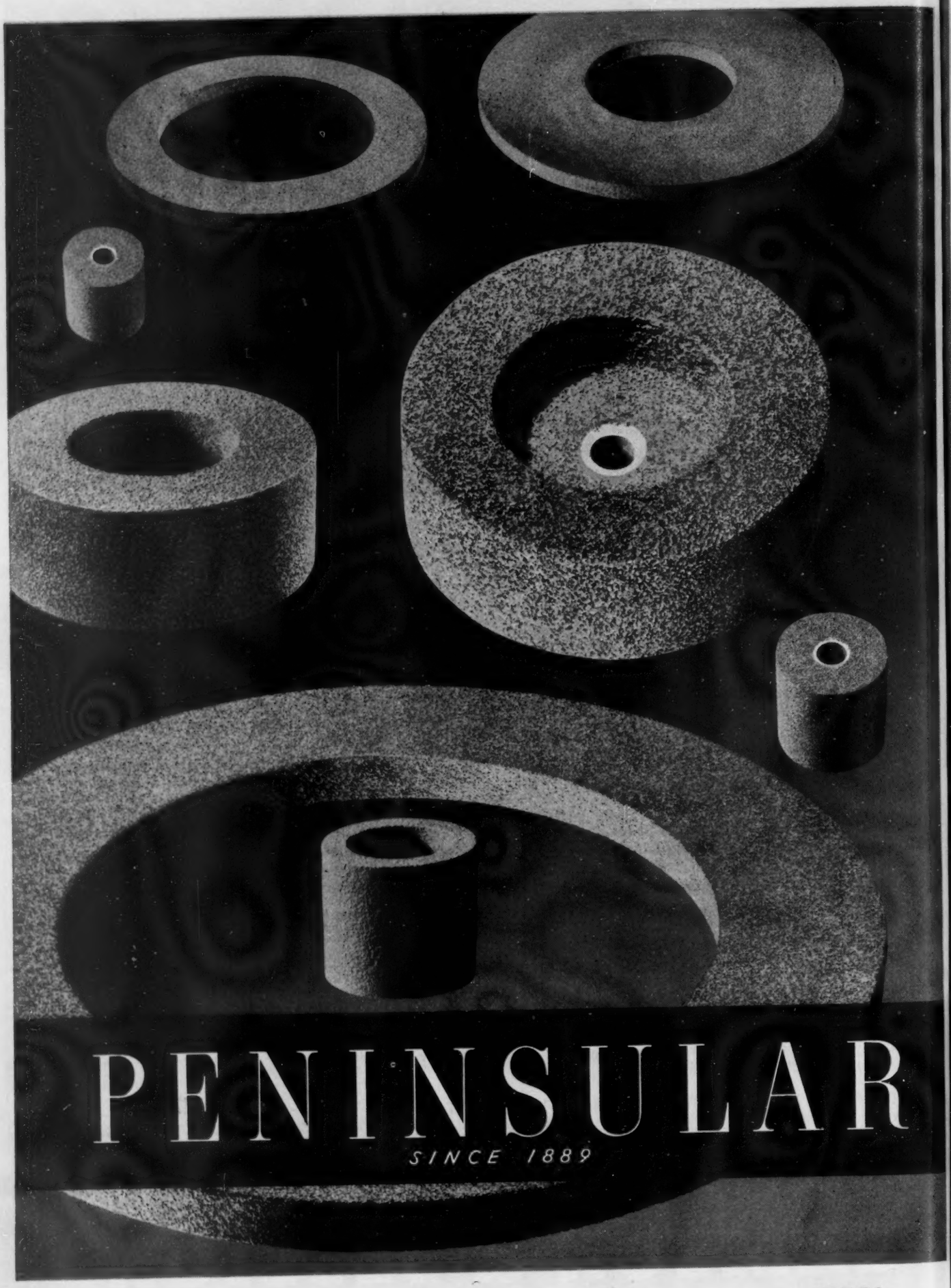
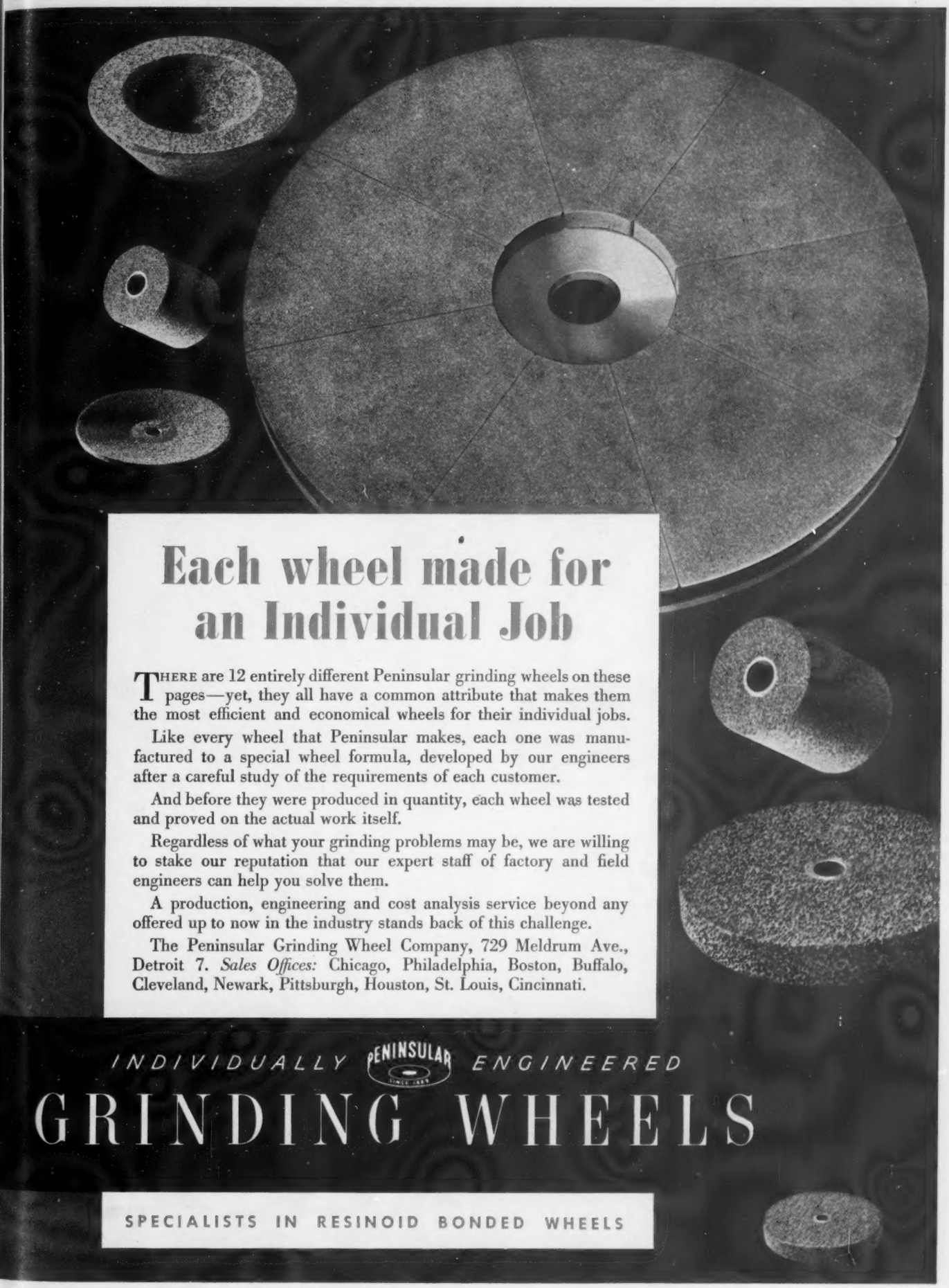

PENINSULAR
SINCE 1889



Each wheel made for an Individual Job

THERE are 12 entirely different Peninsular grinding wheels on these pages—yet, they all have a common attribute that makes them the most efficient and economical wheels for their individual jobs.

Like every wheel that Peninsular makes, each one was manufactured to a special wheel formula, developed by our engineers after a careful study of the requirements of each customer.

And before they were produced in quantity, each wheel was tested and proved on the actual work itself.

Regardless of what your grinding problems may be, we are willing to stake our reputation that our expert staff of factory and field engineers can help you solve them.

A production, engineering and cost analysis service beyond any offered up to now in the industry stands back of this challenge.

The Peninsular Grinding Wheel Company, 729 Meldrum Ave., Detroit 7. *Sales Offices:* Chicago, Philadelphia, Boston, Buffalo, Cleveland, Newark, Pittsburgh, Houston, St. Louis, Cincinnati.

INDIVIDUALLY PENINSULAR ENGINEERED

GRINDING WHEELS

SPECIALISTS IN RESINOID BONDED WHEELS

WHEN DIMENSIONAL

JR ROEBLING

WIRE ROPE AND STRAND • FITTINGS • SLINGS
HIGH AND LOW CARBON ACID AND BASIC
OPEN HEARTH STEELS • COLD ROLLED STRIP
ROUND AND SHAPED WIRE • AIRCORD,
SWAGED TERMINALS AND ASSEMBLIES • AERIAL WIRE
ROPE SYSTEMS • ELECTRICAL WIRES AND CABLES • WIRE
CLOTH AND NETTING • SUSPENSION BRIDGES AND CABLES

ROE

PACEMAKER

ACCURACY IS IMPORTANT

... Specify Roebling

ROUND WIRE!

YOU DON'T WRITE SPECIFICATIONS for the fun of it. You want a definite tensile strength, ductility and finish. You want a certain diameter from one end of the wire to the other. Here at Roebling we realize this . . . *and do something about it.*

Meeting specifications is the art of knowing how to make round wire . . . and knowing how to keep from making one of the hundreds of possible mistakes. Call it an art. Call it precision manufacture. It's both, here at Roebling.

We've had over a century to learn how to make such products as round wire . . . to meet exacting specifications. When it's important that they be kept to the last decimal, call on Roebling.

Then, too, if you have a particularly tough problem involving the use of round, flat or shaped wire or of *any* Roebling product, call in an experienced Roebling engineer. He's always ready to offer prompt, courteous, *effective* service.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

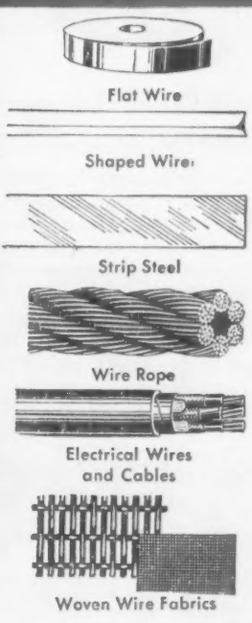
A tip from Old Man Competition: Roebling Round Wire always meets specifications . . . cuts reject costs.

Round Wire

BLING

IN WIRE PRODUCTS

ROEBLING PRODUCTS



Flat Wire
Shaped Wire
Strip Steel
Wire Rope
Electrical Wires and Cables
Woven Wire Fabrics

THE TEMPERATURE RANGE:

32°F to -300°F and below

THE RECOMMENDED ALLOYS:

CIRCLE L 19... CIRCLE L 22... CIRCLE L 205

Send for Complete Low Temperature File!

Gives Chemical Analyses . . . Physical Characteristics . . . Impact Values

The folder illustrated was designed to be slipped in your file "as is." It comes to you as a complete, permanent, easy-to-find, easy-to-use data file on Lebanon Circle L 19 . . . L 22 and L 205. All data has been exhaustively tested. Information includes chemical analyses of both ferritic and austenitic type materials, physical characteristics, Keyhole and "V" Notch Charpy impact properties at various temperatures. Write today for your free copy.

STEELS to be used in castings for low temperature service should be carefully chosen. Wide application has tested and proved three Lebanon alloys . . . Ⓛ 19 . . . Ⓛ 22 and Ⓛ 205.

Lebanon Circle Ⓛ 19 and Ⓛ 205 are ferritic steels for service to −150° F. Circle Ⓛ 22 is an austenitic alloy for service below −150° F. These materials are the products of the special attention Lebanon has given to low temperature service conditions. Lebanon is at present conducting a series of additional tests on alloy steels suitable for temperatures below freezing.

Studies of *individual* service conditions are also gladly undertaken by Lebanon. A study of this type is the surest way to select the steel best fitted to your requirements. Lebanon foundry engineers and metallurgists are ready to confer with you on any steel or alloy castings application.

LEBANON STEEL FOUNDRY
LEBANON, PA.
"In the Lebanon Valley"

ORIGINAL AMERICAN LICENSEE GEORGE FISCHER (SWISS CHAMUTTE) METHOD

Lebanon CIRCLE L ALLOY AND STEEL Castings

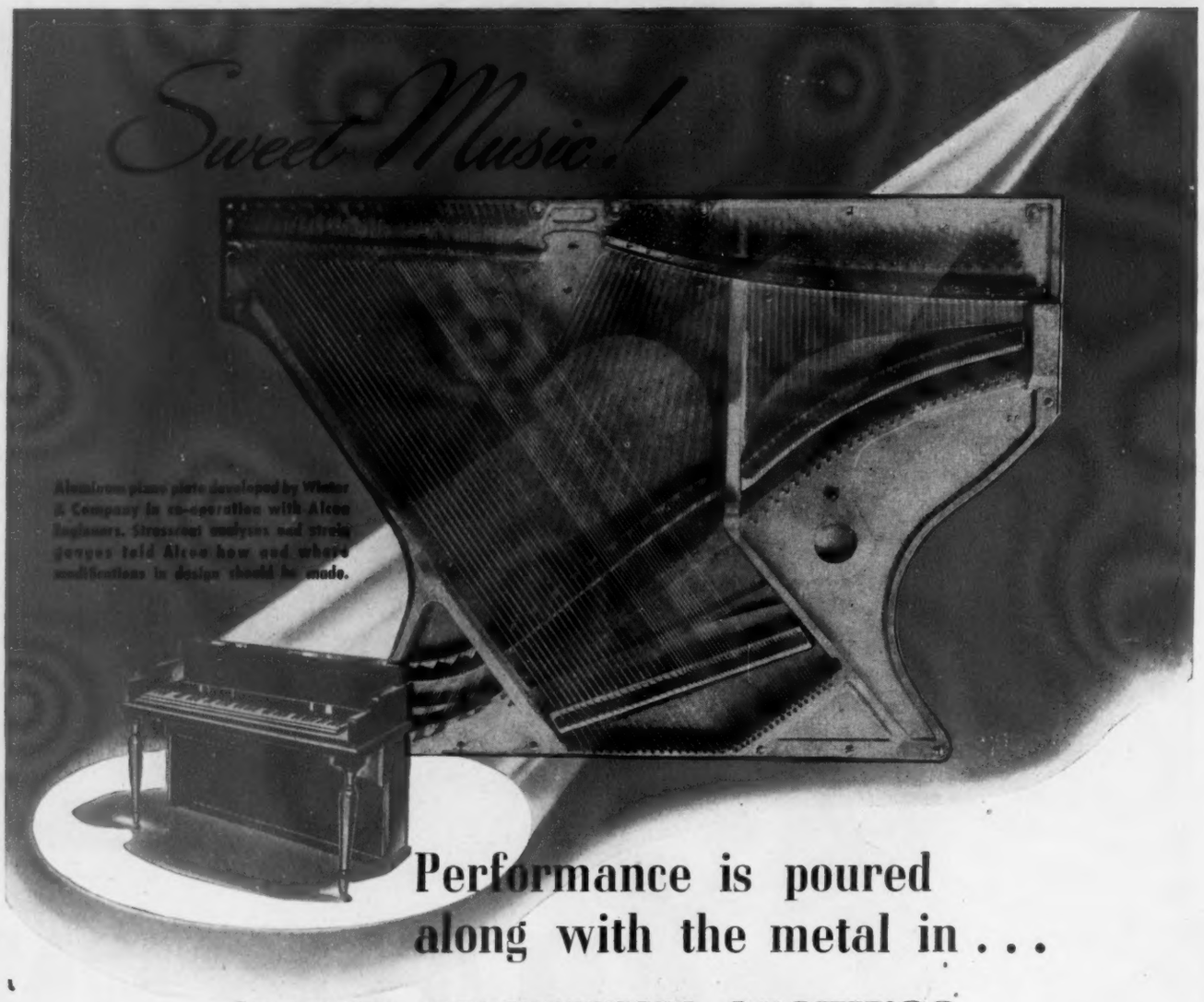
GLOBALLY USED!

HANSEN COUPLINGS

THERE ARE DEFINITE REASONS for the world wide popularity of Hansen couplings. Performance is what put them on top and this same remarkable performance is what is keeping them there. Make no mistake about this — no coupling on the market has the all 'round advantages of Hansen Coupling's. In buying, sound decisions rest on facts, check over these facts on Hansen Push Tite coupling before purchasing any coupling. It is compact, sturdy with all moving parts protected—it will and can take rough going. Its remarkable ABC simplicity in operation is unique. Simply push plug into socket, it is connected, air is automatically turned on. To disconnect merely slide sleeve back with thumb, it is disconnected and air is automatically turned off. No twisting or turning to connect or disconnect, no kinking of hose due to swivel action. It will take pressures as low as a couple of ounces up to a peak of over 10,000 pounds without leaking. No other coupling can match these features. There's a Hansen coupling made for air, oil, grease, oxygen, gasoline and acetylene and they come in a wide range of sizes. • • • Send for free industrial catalogs.

THE HANSEN MFG. COMPANY

1786 EAST 27th STREET • CLEVELAND 14, OHIO



Performance is poured along with the metal in . . .

ALCOA ALUMINUM CASTINGS

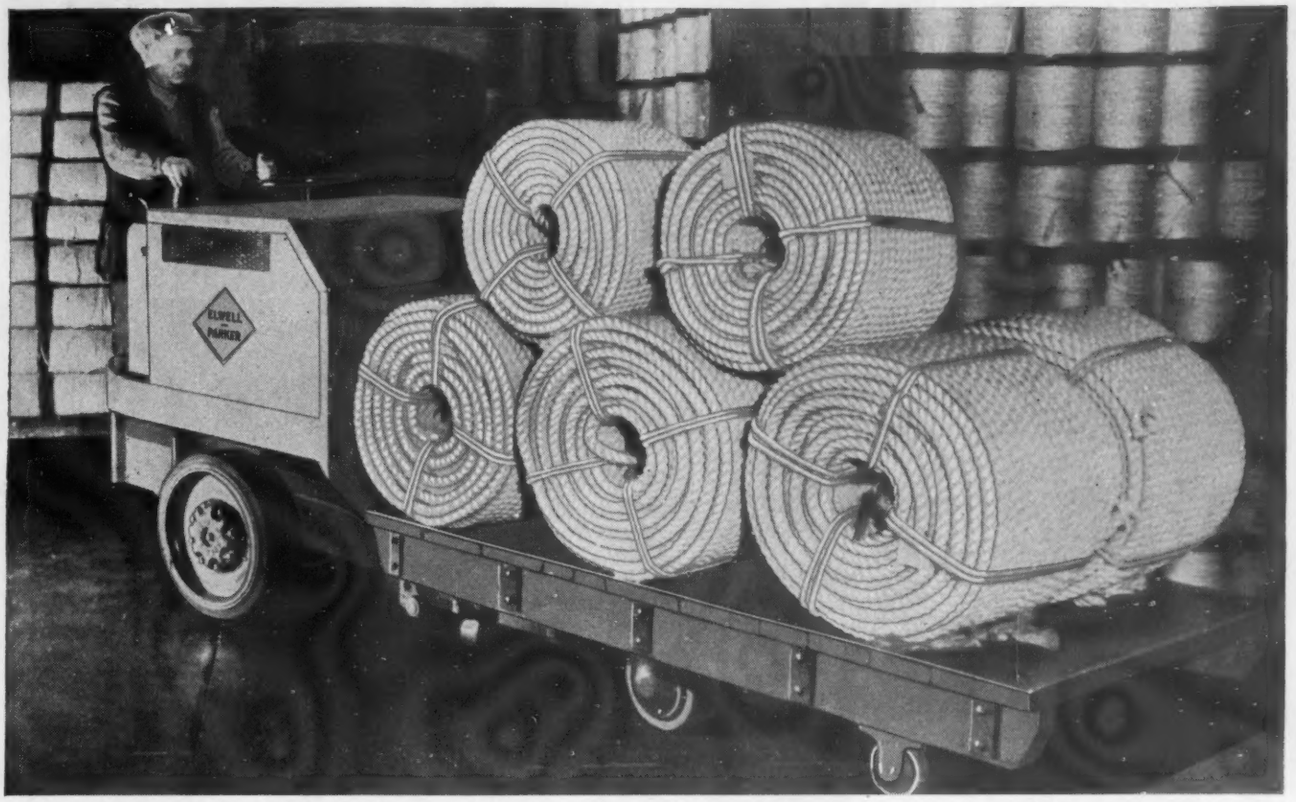
The 209 strings in this piano exert an 18-ton load on the piano plate. And there must be no creep in this casting, to cause the piano to get out of tune. So here's another case where Alcoa's casting development laboratory worked out a scientific distribution of the metal before the part got into production.

Stresscoat and strain gauge analyses indicated how and where modifications in the preliminary design should be made. Changes were made accordingly, resulting in a piano plate which uses the metal most efficiently, and is strong and free from creep.

May we help design your products for production as aluminum castings? You save weight with safety when you put your casting work in Alcoa's hands. For this assistance, and for prices, get in touch with the nearby Alcoa office. Or write ALUMINUM COMPANY OF AMERICA, 2112 Gulf Bldg., Pittsburgh 19, Pa.

ALCOA FIRST IN **ALUMINUM**

Rope gets a lot of pulling-around before it starts pulling for itself!



Eight coils of rope—but only 4 lengths. Elwell-Parker delivered the first Truck for handling these "twin coils" more than 30 years ago—has supplied many additional ones, since.

Industrial LOGISTICS* lowers costs in a Cordage Plant—sets a Load-Transporting Pattern that fits *your* business too

* The science of assembling and handling materials to insure maximum economies at every stage of (a) Procurement, (b) Production and (c) Distribution, using Elwell-Parker Electric Trucks, Tractors and Cranes;

Employing the correct containers (Boxes, Barrels, Bags or Bales) in Master Unit Loads, on Pallets or Skids;

To insure Greater Speed—Faster Production—Greater Turnover—Increased Safety—New Profits.

To lower the cost of producing rope, hunt better ways to handle the stuff rope is made of. Elwell-Parker Specialists did that, for an Eastern Cordage manufacturer.

An Elwell-Parker System mechanizes and *economizes* by speeding heavy, awkward loads in huge Master Units throughout manufacturing, warehousing and final delivery (see cut.) Manual hazards are eliminated—valuable time saved—production increased—transportation costs sharply reduced.

The E-P Man can aid *your* search for new economies by applying Industrial Logistics—modern Load-Transportation tailored to your Plant. Profit by his successful experience—*and welcome!*

The Elwell-Parker Electric Company, 4501 St. Clair Avenue, Cleveland 14, Ohio.

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Greenville	534	Stratford, Conn.	BR7-1554
Jacksonville	5-1384	Syracuse	2-9596
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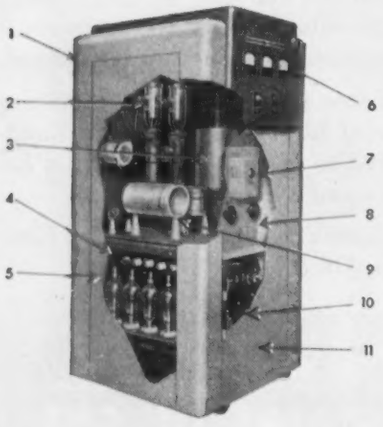
ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

It's Easier

1 INDUCTION HARDENING is actually so simple, that totally inexperienced help, using a work coil of proper design, can handle really "tough" hardening jobs. Reason is you can apply heat to a *pre-selected* area of a part, leaving the balance completely unaffected. Simply place part in work coil and press start button to apply heat.



THESE FEATURES MEAN BETTER, LOWER COST PRODUCTION FOR YOU!

1 What's your heating problem? Brazing? Hardening? Soldering? Annealing? Melting? Heating for Forging? This new productive unit handles them all!

2 Sturdy, long-life Oscillator Tubes are fully protected against overloads.

3 New Coupling System developed by A-C keeps losses low and improves the output efficiency

4 Complete 3-Phase Power System with over 90% power factor.

5 Transformer is designed for heavy-duty 'round the clock production. Has large reserve capacity.

6 Large, easily read instruments show when power is on, also indicate grid and plate currents including filament voltage.

7 Automatic Timer controls heat sequence in split seconds from 2 seconds to 20 minutes . . . makes unit easy for unskilled operators to use. Also gives high product uniformity and reduces rejects.

8 All controls are on one panel . . . protected from tampering by door and lock.

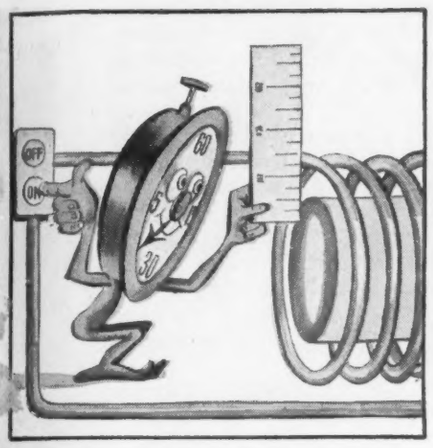
9 Specially designed Choke Coil protects rectifier tubes from damage by high frequency radio currents.

10 Safety Features: Heavy-duty control; high water-temperature switch; fuses; interlocking switches on doors protect operators.

11 Attractive, Compact Steel Cabinet mounted on heavy-duty casters encloses unit. Provides shielding.

to Harden...

WITH ALLIS-CHALMERS GREAT NEW INDUCTION HEATER.



2 AUTOMATIC TIMER can be set for any heat sequence in split seconds from 2 seconds to 20 minutes. When the *exact amount* of heat has been applied at *exactly* the right *intensity*, timer turns off power. Each successive part receives the same amount of heat, resulting in a uniformity difficult to obtain with other heating methods.

3 CONTROLLED QUENCHING is secret of uniform hardening! With Allis-Chalmers Induction Heater, water quench can be *direct connected* to Timer. Quenching operation and heat sequence are *identical* each time. This feature, plus design of work coil, completely controls hardness and depth of penetration within very close limits.

4 HARDENING SEVERAL pieces at the same time, coupled with simple, automatic handling equipment further increases production. A-C's Induction Heater is now being successfully used for lower cost hardening of a wide variety of items in many industries. Why not cut your production costs with this new electronic tool?

A 1997

NEW MOVIE EXPLAINS INDUCTION HEATING

This new A-C movie in full color and sound shows how a typical 5 minute hardening operation is completed in less than 5 seconds . . . other spectacular brazing operations! Contact your nearest A-C District Office for a showing, or write direct to Allis-Chalmers, Milwaukee 1, Wis. for a copy on loan. Film runs 12½ minutes on 16 mm sound projectors only. Offer limited to continental U.S.A.

ALLIS-CHALMERS

MILWAUKEE 1, WISCONSIN

One of the Big 3 in Electric Power Equipment — Biggest of All in Range of Industrial Products.

HEAR THE BOSTON "POPS": *Every Saturday Evening, American Broadcasting Co.*

FLASH-WELD YOUR ALUMINUM

Helps Your Product - - - - - - and Your Pocketbook!

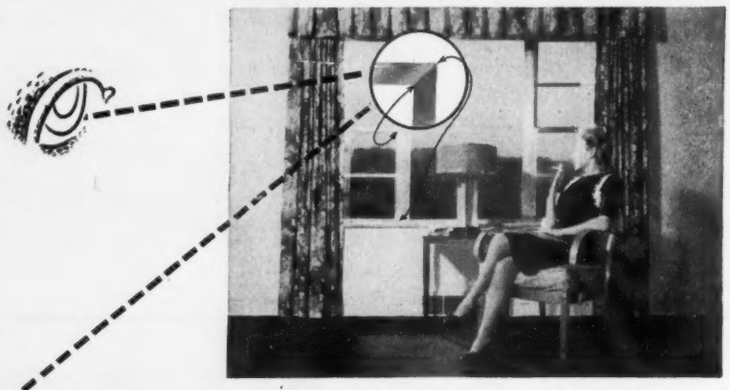
Co-operation between the fabricator and welding equipment manufacturer is always sound procedure. In the case of flash-welding aluminum, this co-operation is essential. Taylor-Winfield, a pioneer in resistance welding, can give you profitable assistance on aluminum and other metals, as evidenced by our work with many manufacturers.

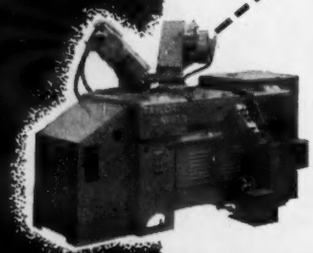
The tremendous variety of aluminum shapes offers numerous design possibilities. Taylor-Winfield has developed welders to flash-weld many of these shapes.

The nature of aluminum is a factor since the electrical and mechanical specifications for welding are more exacting than the requirements for other metals. Taylor-Winfield's diversified experience can short-cut your road to full production.

Flash-welding aluminum gives you several important benefits . . . homogeneous joints, close tolerances, minimum finishing time, long runs, low unit costs . . . and a finished product which takes full advantage of aluminum's natural beauty.

Taylor-Winfield will be glad to have a representative discuss your flash or other resistance welding requirements.





A FEW EXAMPLES OF FLASH-WELDING OF ALUMINUM

Window and screen frames; frames for bunks, bicycle rims, rings, trim and mouldings; and many other applications of flat, solid, tubular, and other shapes in extruded, wrought, cast, and forged aluminum alloys.

LEFT New, fast production Taylor-Winfield flash-welder with fixtures for the precision welding of mitered joints in extruded aluminum sections.

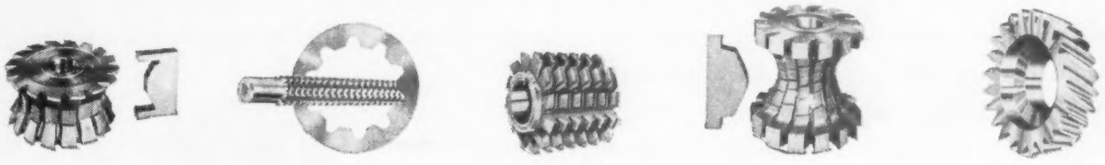
The TAYLOR-WINFIELD CORPORATION

WARREN . . . OHIO

Reduce Part Costs

WITH ENGINEERED CUTTING TOOLS

Often, Illinois Tool engineers are able to help a manufacturer reduce the production cost of machined metal parts by changing the design of the cutting tools or by recommending a different production technique.



HEADQUARTERS FOR ENGINEERED CUTTING TOOLS

ght to all America from
b of air transportation.

ILLINOIS
TOOL WORKS

MANUFACTURERS OF METAL CUTTING TOOLS AND SHAKEPROOF PRODUCTS

2501 N. Keeler Avenue, Chicago 39, Illinois
In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario

Molybdenum Improves Quality of CASTINGS

Molybdenum as an alloying agent in castings found greatly enlarged uses under war necessity and the resulting knowledge is now being translated in terms of peacetime production. High strength in heavy sections and uniform strength in both heavy and light sections are among the characteristic advantages of the molybdenum alloys. A wide range of physical properties, obtainable by heat treatment, opens new possibilities to the designer of castings, in economy of weight and durability under severe conditions of service.

The Molybdenum Corporation, as a supplier of Molybdenum, Tungsten, and other alloying materials, is glad to be consulted by any user of these products.

MASTER CRAFT ALLOYS

AMERICAN Production, American Distribution, American Control, Completely Integrated.

Offices: Pittsburgh, New York, Chicago, Cleveland, Detroit, Los Angeles, San Francisco, Seattle.

Sales Representatives: Edgar L. Fink, Detroit; H. C. Donaldson & Co., Los Angeles, San Francisco, Seattle.

Subsidiary: Cleveland-Tungsten, Inc., Cleveland, Ohio

Works: Washington, Pa.; York, Pa.

Mines: Questa, N.M.; Yucca, Ariz.; Urad, Colo.

MOLYBDENUM CORPORATION OF AMERICA

GRANT BUILDING PITTSBURGH, PA.

MCA

Name the DRYING SPEED... *Red Lead can meet it*

Through the years, Red Lead's effectiveness in fighting rust has won it general acceptance by industry as the standard for metal protection.

Perhaps less generally known, however, is that Red Lead's *extra* protection is available in an extensive range of paint formulations to give you the drying speed you need.

This wide choice is due to Red Lead's compatibility with the many types of paint vehicles in use today. It can be combined with the new synthetic resins, modified synthetics, natural resins, drying oils and other vehicles.

So, whether painting schedules demand quick drying, or whether normal drying time is permitted, remember, you can take full advantage of the plus protection that has made Red Lead famous.

Why RED LEAD Means Extra Rust Protection

Red Lead has the property of counteracting acid conditions, recognized as accelerators of rust. In the presence of various acids, Red Lead forms insoluble lead salts at the approximate rate at which the acids are supplied.

This is true whether the acid originates from acid-forming environments, such as gas, smoke and moisture in the atmosphere, or from the decomposition of the vehicle. Thus, a rust-inhibiting condition is maintained with a Red Lead paint.

Red Lead also forms an adherent protective shield which prevents electro-chemical action, another prime cause of rusting.

Specify RED LEAD for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a metal paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint.

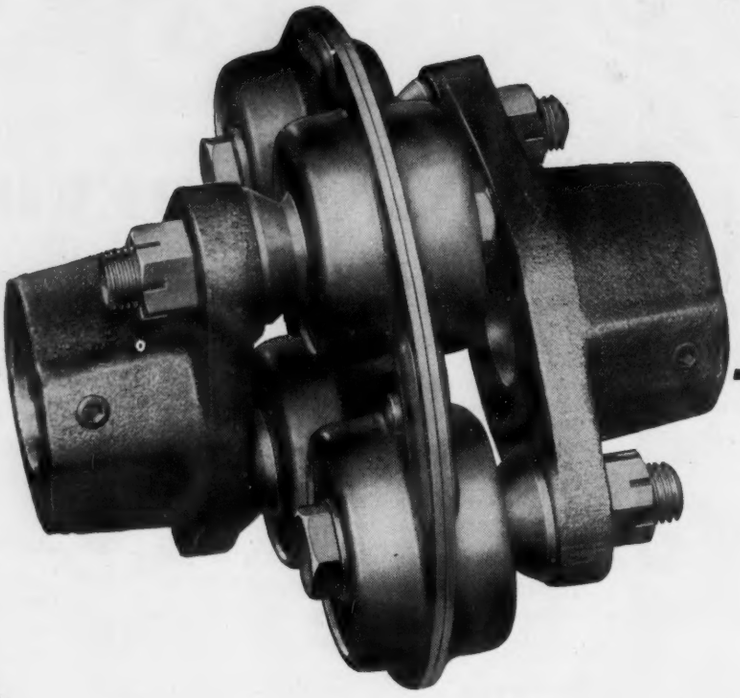
No matter what price you pay, you'll get a better paint for surface protection of metal, if it contains Red Lead.

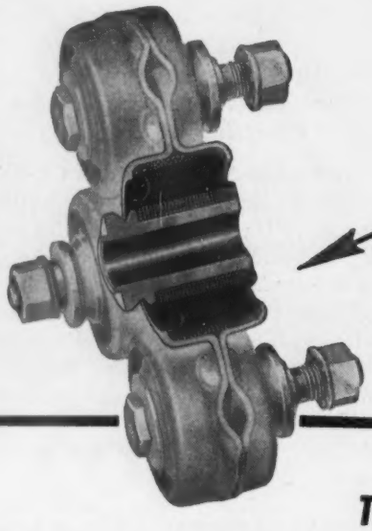
Write for New Booklet—"*Red Lead in Corrosion Resistant Paints*" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas – ranging from Red Lead-Linseed Oil paints to Red Lead-Mixed Pigment-Varnish types. If you haven't received your copy, address nearest branch listed below.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division.)

Dutch Boy
Reg. U.S. Pat. Off.
Red Lead

A PRODUCT OF B-W BORG-WARNER





There's MORE FLEX in MORFLEX COUPLINGS!

These shock-absorbing Neoprene "muscles" take the rap!

The Neoprene biscuit assembly is an exclusively Morse-designed feature. No metal-to-metal contact; bearing wear reduced. Shock, uneven impulses and vibration are absorbed. Positive, direct drive is permitted in a Morflex Coupling installation.

The *single* Morflex handles shaft misalignment up to 5°; the *double* Morflex handles extreme misalignment. There is a Morflex Coupling to fit your needs and cost requirements . . . and available in quantity!

Address our Detroit office for complete information.

MORSE CHAIN COMPANY, DETROIT 8, MICHIGAN • ITHACA, NEW YORK

MORSE ROLLER and SILENT CHAINS

SPROCKETS • FLEXIBLE COUPLINGS • CLUTCHES

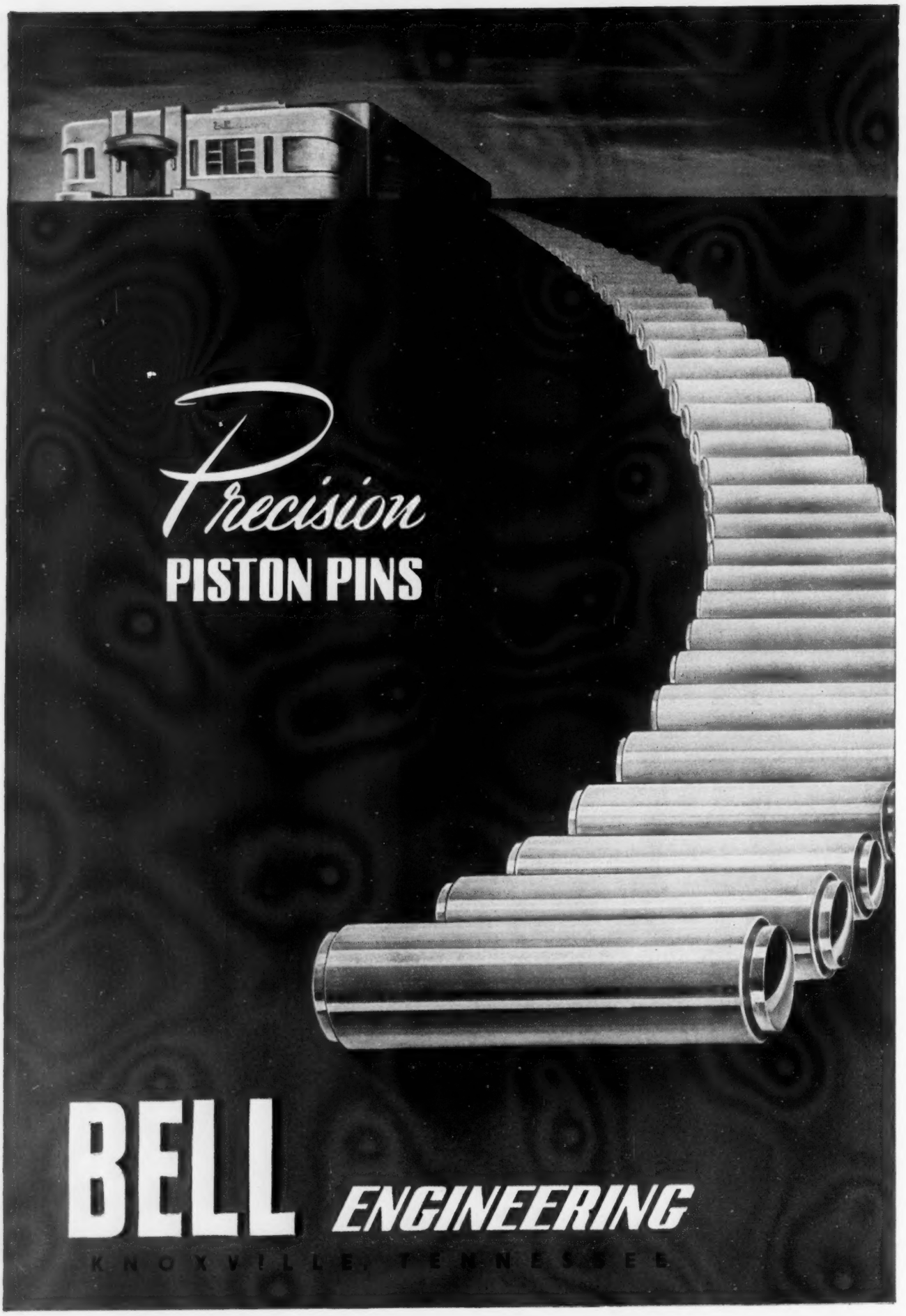
EASY ON THE DRAW

If your manufacturing processes involve severe stamping, forming or drawing operations, you will find Weirton steels well qualified for the assignment. They provide deep-drawing qualities that speed the fabrication of intricate shapes—reduce scrap loss and production costs. Manufacturers in many fields have learned to depend on Weirton for steels of uniform quality, exceptional ductility.

WEIRTON STEEL CO.

WEIRTON, W. VA. *Sales Offices in Principal Cities*

Division of **NATIONAL STEEL CORPORATION** *Executive Offices, Pittsburgh, Pa.*


Precision
PISTON PINS
BELL ENGINEERING
KNOXVILLE, TENNESSEE

CORROSION INFORMATION

. . . available to all

IN working out the design of equipment, engineers can proceed on the basis of well-established and consistent *mechanical* properties of their materials.

However, where corrosive environments are to be encountered in use, an uncertainty often appears as to how these materials will perform. For corrosion resistance is not a *fixed* property – but, rather, one that varies greatly with media and operating conditions.

To help you eliminate—*or minimize*—this uncertainty of selection, The International Nickel Company offers its experience, facilities and accumulated data.

The corrosion engineering research – started by INCO over 38 years ago – has helped put metal selection upon a scientific footing. Laboratory studies, plant tests, outdoor and marine tests have yielded a fund of corrosion data to guide designers and buyers of equipment.

INCO originally undertook this research because one of the principal markets for Nickel is in alloys designed primarily to resist corrosion. Throughout the years, the guiding aim of the program was *to use Nickel Alloys where they belonged . . . and to best advantage.*

Carrying out this aim made it necessary not only to establish what Nickel Alloys could do, but also to discover how they would perform relative to other materials. Guided by this information, INCO's corrosion engineers can make recommendations for Nickel Alloys in specific applications.

INCO corrosion engineering research can be put to work for you in three ways:

By applying to your particular problem the information recorded on over 30,000 corrosion data sheets.

By carrying out specially-developed tests in your own plant.

By undertaking studies of general corrosion problems at INCO *Laboratories and* INCO *Field Test Stations.*

INCO corrosion engineers will make INCO's corrosion information as readily available to you as if it were in your own files.

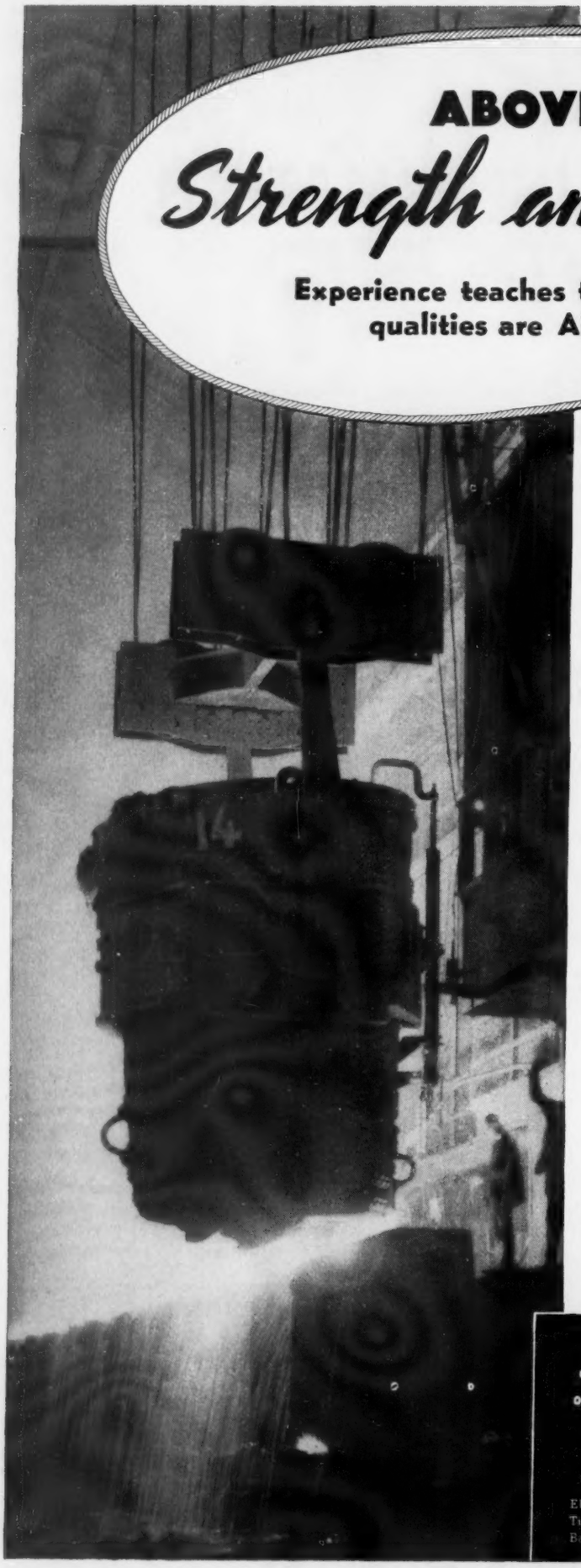
INCO
TRADE MARK

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

ABOVE ALL!

Strength and Flexibility

Experience teaches that these Rope Wire qualities are ALWAYS "Firsts"



ONE of the toughest of all jobs that wire rope has is on the overhead crane that handles molten steel. Here the wire rope lifts a 170,000 lb. ladle, filled with 300,000 lbs. of steel. It must be spotted accurately for teeming into mold after mold. A break would mean loss of thousands of dollars in steel and mill equipment.

In short, the rope has to be good! It has to be strong and flexible--strong, to lift and carry its many-ton burden, day in, day out--flexible, to flow smoothly and efficiently over crane sheaves.

Strength and flexibility depend on the wire from which the rope is woven. These qualities, built into every foot of Yolectro High Carbon Rope Wire, are always "firsts," as are uniformity of gauge, toughness to resist abrasion, and ability to resist corrosion. Like all its wire mill products, the wire supplied by Youngstown to wire rope manufacturers is of finest quality steel, refined, rolled and drawn to exact specifications.

No user of wire rope has a better opportunity to test and prove the qualities of the product than the steel maker. Here, in the Youngstown open hearth department, steel for rope wire is being teemed from ladle into ingot molds

QUALITY TRADE MARK YOUNGSTOWN SERVICE

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

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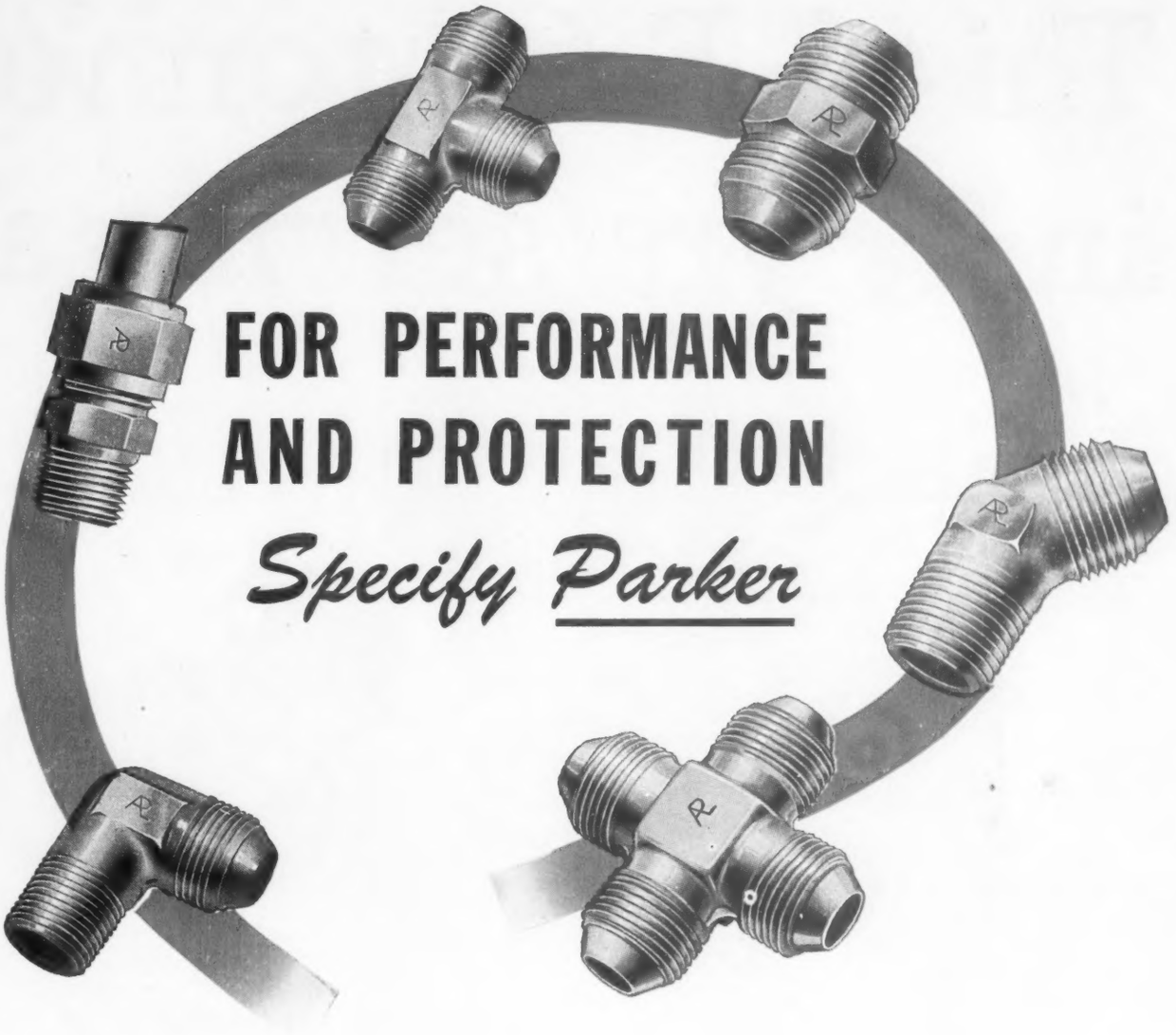
Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Electrolytic Tin Plate-Coke Tin Plate-Special Coated Manufacturing Ternes Tin Mill Black Plate-Pipe and Tubular Products-Sheets-Plates-Conduit-Bars-Rods-Wire-Cold Drawn Carbon Steel Rounds-Tie Plates and Spikes.



FOR PERFORMANCE AND PROTECTION

Specify Parker

Parker tube couplings are pressure-tight—leak-proof—vibration-protected.

That's the result of more than twenty years' experience in engineering Fluid Power systems. Typical of the *practical* results this "know-how" brings to you is the famous Parker Triple Coupling. Its exclusive patented design insures dependable, trouble-free operation. So efficient and economical is its operation that its basic principle was standardized for Army-Navy use on aircraft and ordnance.

If the type of tube coupling you need isn't shown here—ask us for it. The Parker line is complete. It includes a wide variety of types—in steel, brass, stainless or aluminum—and in sizes from ⅛" to 1½", standard or heavy weight. Complete stocks are available in our warehouses—or from your jobber. Just say "Parker". You'll get prompt delivery—and new freedom from pressure joint trouble.

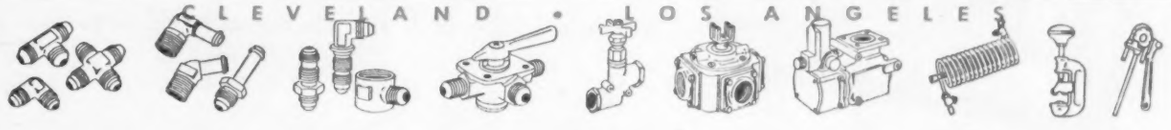
★ ★ ★

Do you have your copy of our new catalog 201-C? It gives complete data on all Parker Triple Couplings. Yours for the asking—from your jobber—or write direct to the Parker Appliance Company, 17325 Euclid Avenue, Cleveland 12, Ohio.

In Canada, Railway & Power Engineering Corporation, Ltd., Montreal, P.Q.

THE PARKER APPLIANCE CO.

CLEVELAND • LOS ANGELES



FLUID POWER PRODUCTS FOR ALL INDUSTRY

This G-E 65-tonner
in 2½ yrs service at

65-ton G-E diesel-electric hauls nearly a thousand tons up a .5 per-cent grade and around a 17-degree curve.

Consider these advantages of using a G-E diesel-electric

Availability is 90 per cent up! A G-E diesel-electric carries sufficient fuel for many days' operation; needs only periodic inspections; runs for long periods between overhauls.

Starts on the press of a button! No lost time in getting diesel-electric ready for work.

Switching is speeded up by diesel-electric's fast, responsive operation.

Fuel costs are definitely lower than those of any other type of industrial locomotive.

Cleanliness is an important factor, particularly where absence of smoke is essential to avoid injury to products.

Safety is enhanced wherever sparks or hot ashes would be a fire hazard.

Maintenance is simplified by absence of boiler, firebox, and heavy reciprocating parts.

Engine house expense is minimized because no fire cleaning, ash handling, watering, or watching is required.

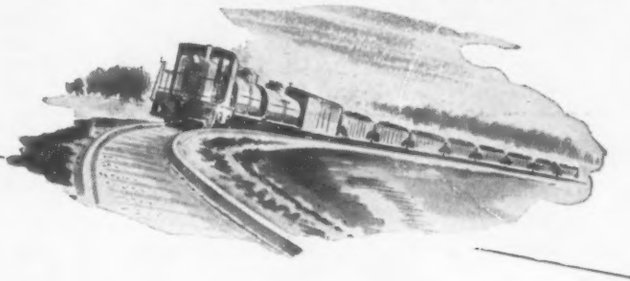
Track maintenance is low, because of the smooth torque and the short wheelbase of the diesel-electric.

G-E diesel-electrics often return 20 to 30 per cent annually on their purchase price.

diesel-electric *Industrial* LOCOMOTIVES

A standard line—built for stock—quick delivery—low cost

r never missed a trip
t American Viscose



Hard service hauling long strings of cars up steep grades for 16 hours a day has yet to mar the amazing availability record of this G-E diesel-electric locomotive! In service at the Front Royal, Va., plant of the American Viscose Corporation since October, 1943, this 65-tonner has been on the job whenever needed, ready to go at the touch of a button.

Negotiating curves up to 17 degrees and grades up to 1.5 per cent, this locomotive is hauling loads well in excess of those it was warranted to handle when purchased. As many as 20 cars averaging 50 tons each have been hauled up a .5 per-cent grade without difficulty.

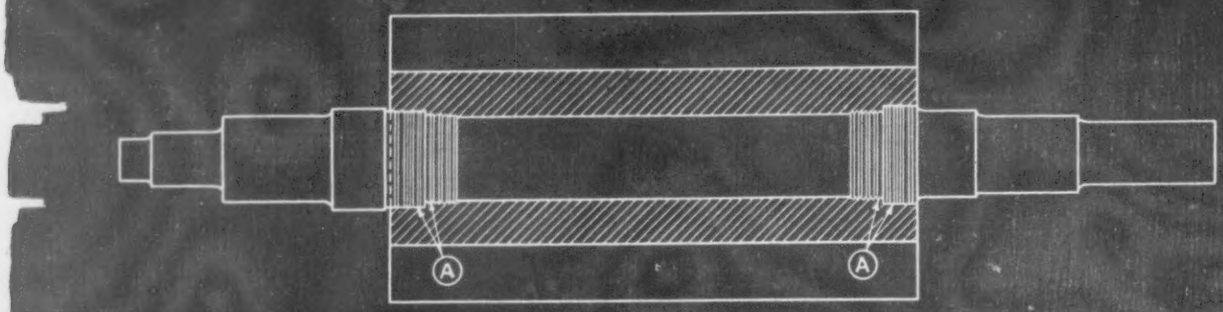
The freedom from smoke and the danger of sparks are also important factors. For this locomotive must operate where valuable rayon and staple fibres are loaded. As compared to the steam-charged locomotive also used at this plant, moreover, it has cut fuel costs, eliminated hourly time-outs for charging, and saved hundreds of dollars in maintenance.

Why not let a G-E engineer make a survey of your motive power needs with an eye to cutting your costs for switching, spotting, and hauling? He can recommend the size of diesel-electric best adapted to your plant.

120-25-9505

APPARATUS DEPARTMENT
GENERAL ELECTRIC
SCHENECTADY, N. Y.

IN THE NEW ELLIOTT GAS TURBINE



Above — *Assembling rotors in one of the 12,500 cfm compressors, specially developed for the Elliott Gas Turbine.*

Right — *A rotor-shaft assembly, ready for brazing with EASY-FLO preplaced, being lowered into the furnace. Note leads to electric thermometer which are connected to each end of rotor for accurate temperatures.*

EASY-FLO BRAZING SOLVED AN IMPORTANT METAL JOINING PROBLEM

In this New Gas Turbine Power Plant, developed by the Elliott Company of Jeannette, Pa., two vital elements are the Elliott-Lysholm Air Compressors. In designing these units, the problem arose of joining steel stub shafts to the big cast iron rotors. After studying a number of methods, Elliott Engineers, because of the high strength obtainable at low temperature, selected silver alloy brazing as best suited. They then developed a design (shown above) and a brazing procedure to make these heavy duty joints.

Basic steps in the procedure are—(1) Groove and thread area of shafts and bore of rotor are thoroughly cleaned—(2) 1/16" EASY-FLO wire is wound in shaft grooves—(3) Grooved areas and rotor bore are fluxed—(4) Stub shafts are screwed into rotor—(5) More flux is added around joint and assembly is brazed in furnace shown at left, especially made by Elliott for the job.

This unusual application adds further evidence of the constantly growing scope of low-temperature EASY-FLO brazing. It's readily adapted to joining ferrous, non-ferrous and dissimilar metals—large or small.

WHERE CAN YOU USE EASY-FLO BRAZING?

It will pay you to get the answer to that question. For it has been proved on thousands of jobs throughout industry that EASY-FLO brazing makes joints equal to solid metal in all essential properties—that it makes fast production practical—that it is surprisingly economical. Bulletin 12-A gives full information. Write for a copy today.

HANDY & HARMAN

HANDY & HARMAN FOUNDED 1867 QUALITY SERVICE

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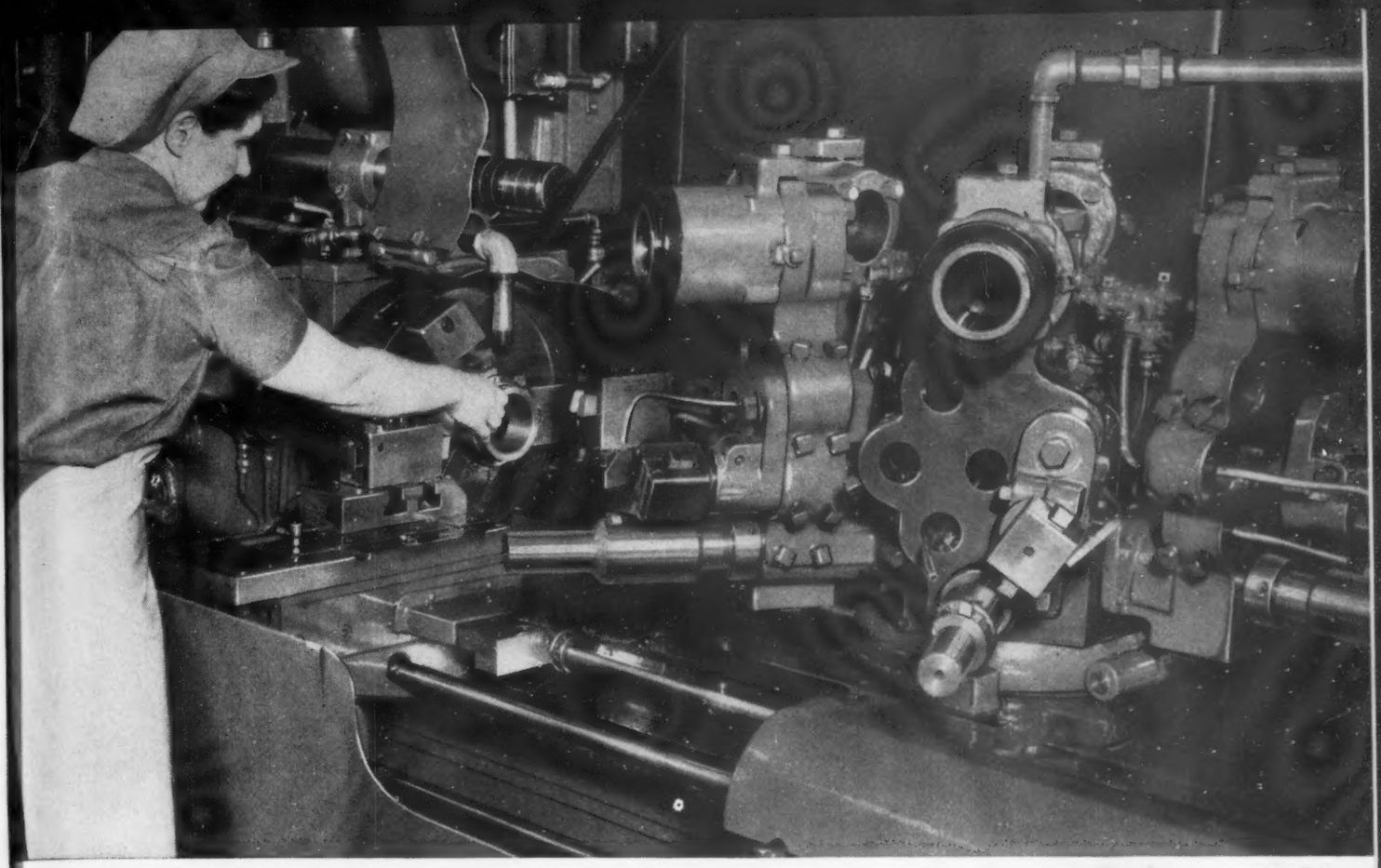
Bridgeport Conn. • Chicago Ill. • Los Angeles, Cal. • Providence, R. I. • Toronto, Can

Agents in Principal Cities



THREE PARTS PER TURRET CYCLE

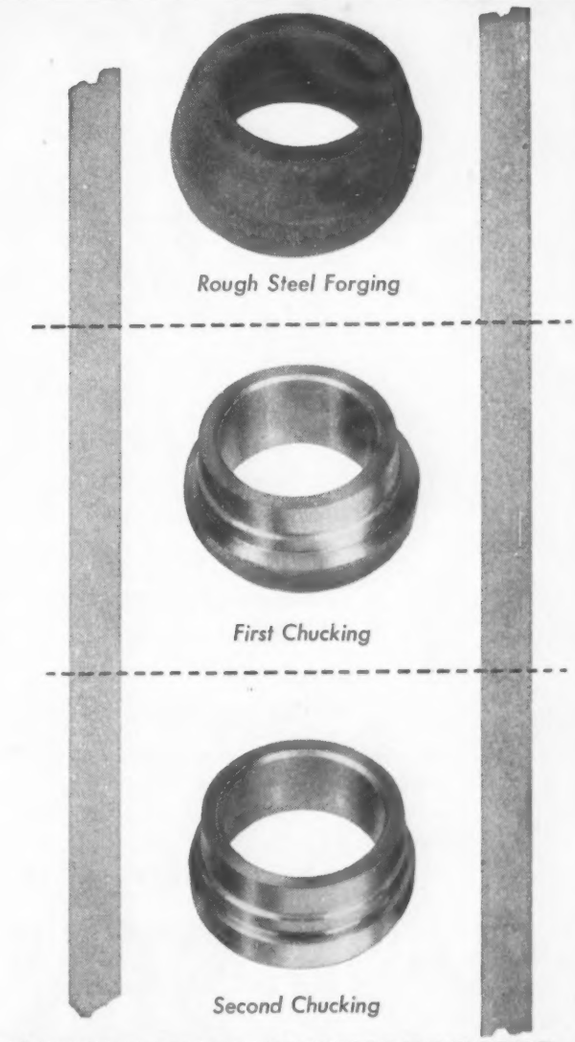
with Triplicate Tooling

on the FASTERMATIC

Here's another way the adaptability of the Fastermatic can be used to advantage even on comparatively simple jobs.

To complete the turning of drive gears in two chuckings, two Fastermatics are used—one for each chucking. The turret of each machine is set up with three identical sets of tools so that a piece is both rough and finish turned with every second indexing. There is no skip indexing to waste production time. And still more production time is saved by the independent operation of the cross slides.

Whether it's high or low production machining, whether it's a few or a large number of operations per chucking, the Fastermatic provides a degree of flexibility that brings lower costs on a wide variety of work. With its automatic machining cycle, there is nothing for the operator to do but load and remove the work. Write for literature.



GISHOLT MACHINE COMPANY

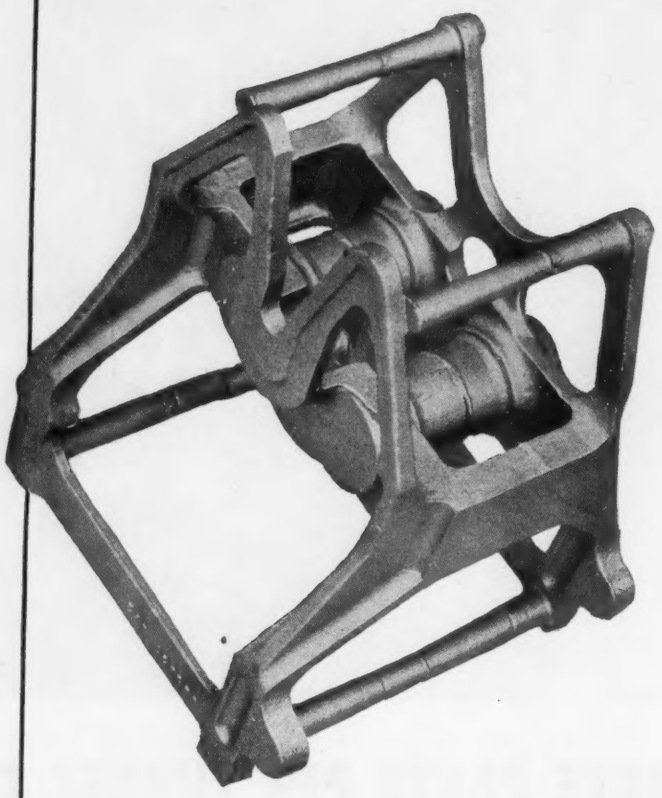
1217 East Washington Ave. • Madison 3, Wis.

Look Ahead . . . Keep Ahead . . . with Gisholt

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

AIRCRAFT STANDARDS MET

. . . and Production Costs Reduced!



Designers of aircraft parts have two basic principles always before them—(1) Adequate strength and (2) Minimum weight.

And they have the same kind of cost problems that you do.

They know that patterns for castings cost less than dies, especially for short runs.

The Chief Process Engineer of a well-known aircraft manufacturer permits us to quote him as follows:

> "Intricate shapes can be cast much more readily than forged, and there are no objectional directional properties . . . machining time is saved because it is possible to cast to close contours . . . castings can be easily welded to other parts."

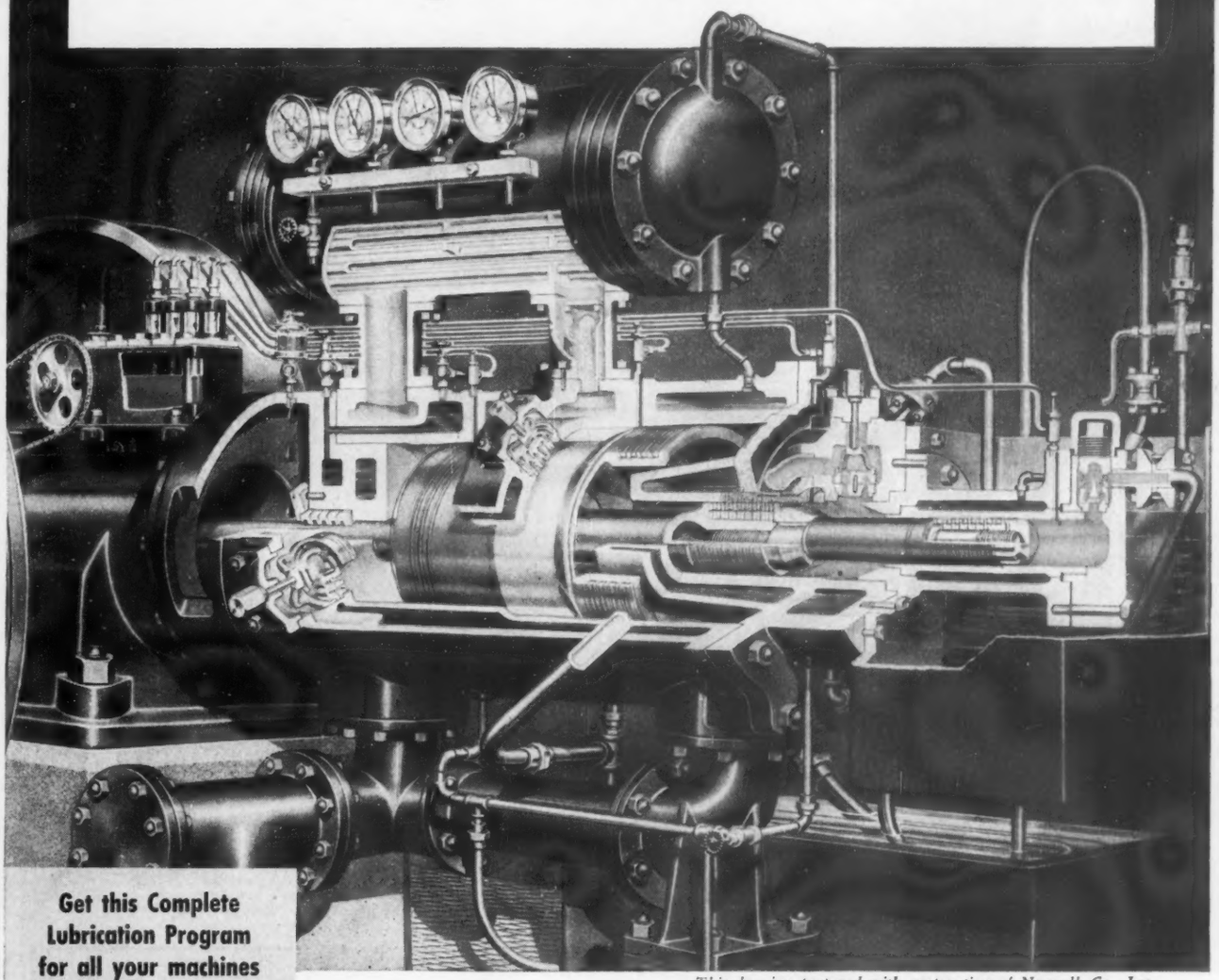
In designing parts for any machine, doesn't that just about cover all the requirements—strength, low cost, low machining expense, and metallurgical properties specified in advance?

The first step in building an improved product, or in cutting costs, is to plan it that way—a steel castings engineer can help you. Steel Founders' Society, 920 Midland Building, Cleveland 15, Ohio.

MODERNIZE AND IMPROVE YOUR PRODUCT WITH

STEEL CASTINGS

New Oil meets high pressures here!



This drawing prepared with cooperation of Norwalk Co., Inc.

Get this Complete Lubrication Program for all your machines

- Lubrication Study of Your Entire Plant
- Recommendations to Improve Lubrication
- Lubrication Schedules and Controls
- Skilled Engineering Counsel
- Progress Reports of Benefits Obtained

GARGOYLE Lubricants

THIS multi-stage air compressor sucks in air . . . or gas . . . at low pressures and in four successive steps, squeezes it to pressures of 3,000 lbs. per square in.

The problems of Correct Lubrication mount with the pressures. Here, oil has to protect against wear and seal against blow-by in the face of the rising pressures. It has to fight off the formation of carbon deposits in the heat of compression. And it must stay on the moving parts despite the washing action of condensing moisture.

To do this multiple job, Socony-Vacuum has developed new proved air-compressor oils — Gargoyle D.T.E. 100 Series Oils. These new oils form strong films to reduce wear. They possess high preferential wetting properties to adhere closely to the working parts, and high chemical stability to minimize valve-clogging deposits.

These new oils are available to help keep your air compressor on the job longer with less time out for repairs and replacements.

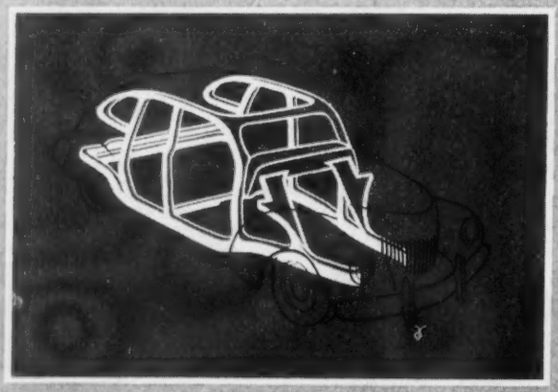
Socony-Vacuum Oil Co., Inc.

and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation

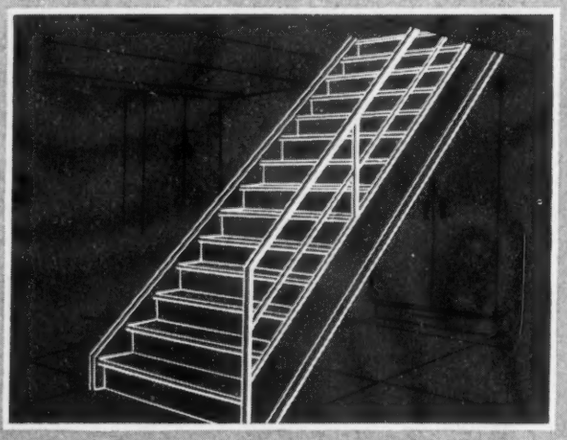
"STEEL

We can help you CASH IN on Steel's advantages

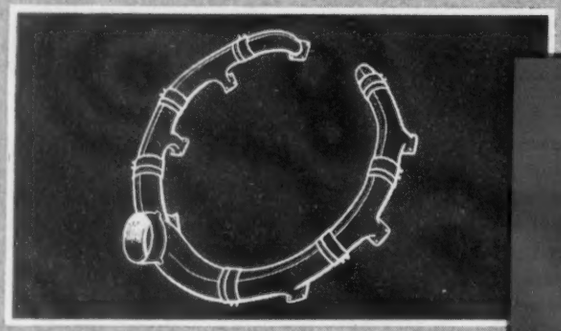
Perhaps you are not making the most of Steel's advantages in the design and manufacture of your products. As the world's largest maker of Steel, we can offer you complete counsel as to how this versatile material can work for you. The right steel in the right application saves money... and makes money by improving product acceptance. Write us for free metallurgical help.



STIFFER FRAMES for the new model cars are made possible through Steel's ability to be cut, formed and welded into a one-piece bridge-like structure. Steel's superior fabricability gives the designer a free hand to create a better product at no increase in cost.



PREFABRICATED stairways, closets and other architectural units offer endless opportunities to capitalize on Steel's sales appeal. Many fabricators use U·S·S PaintBond Galvanized Sheets for such products because they can be painted so successfully.



10,000 HOURS of high-temperature service on an American Airlines flagship is the record of this U·S·S Stainless Steel exhaust manifold. Wherever such extreme resistance to heat and corrosion is a must, you can't beat Stainless!

Only STEEL can do so many jobs so well

"Steel is still King!"

Quoted from MATERIALS & METHODS

FOR each application there is usually one best material. It is no mere coincidence that today Steel is the odds-on favorite in virtually every field of manufacture. There are crystal-clear reasons why this is true. . . .

1 ECONOMY

Low cost has always been a fixed characteristic of Steel, not only in the price of the basic material but in the expenditure required to make it into a finished product.

2 VERSATILITY

Only Steel can be produced in such an extreme variety of alloys, forms and finishes. Its characteristics can be tailor-made to fit exactly the demands of the end use . . . high strength-weight ratio, resistance to abrasion, heat, corrosion and fatigue.

3 FABRICABILITY

No other material can be so readily cut, formed, welded, riveted, soldered, machined, stamped and finished.

4 AVAILABILITY

The persistent and far-thinking expansion of Steel's production and distribution facilities makes it today's most abundant manufacturing material.

Have you explored the possibilities of these special purpose U·S·S Steels?

U·S·S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S CARILLOY STEELS—Alloy steels for the special jobs of industry.

U·S·S HIGH STRENGTH STEELS to resist atmospheric corrosion and increase strength without adding weight.

U·S·S COPPER STEEL to give at least twice the atmospheric corrosion resistance of regular steel at little additional cost.

U·S·S ABRASION-RESISTING STEEL to combat wear and friction.

U·S·S HOT-ROLLED AND COLD-ROLLED STEELS to provide the basic advantages of steel, plus maximum economy in accordance with the needs of each job.

U·S·S PAINTBOND—A galvanized, Bonderized sheet that permits immediate painting and holds paint tighter.

U·S·S VITRENAMEL—Sheets designed especially for porcelain enameling.

U·S·S ELECTRICAL SHEETS for motors, generators and transformers.

LISTEN TO . . . the "Hour of Mystery" presented by United States Steel on the radio every Sunday evening. Consult your local newspaper for time and station.

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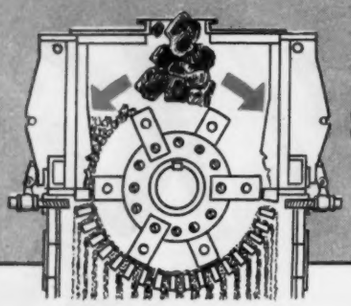
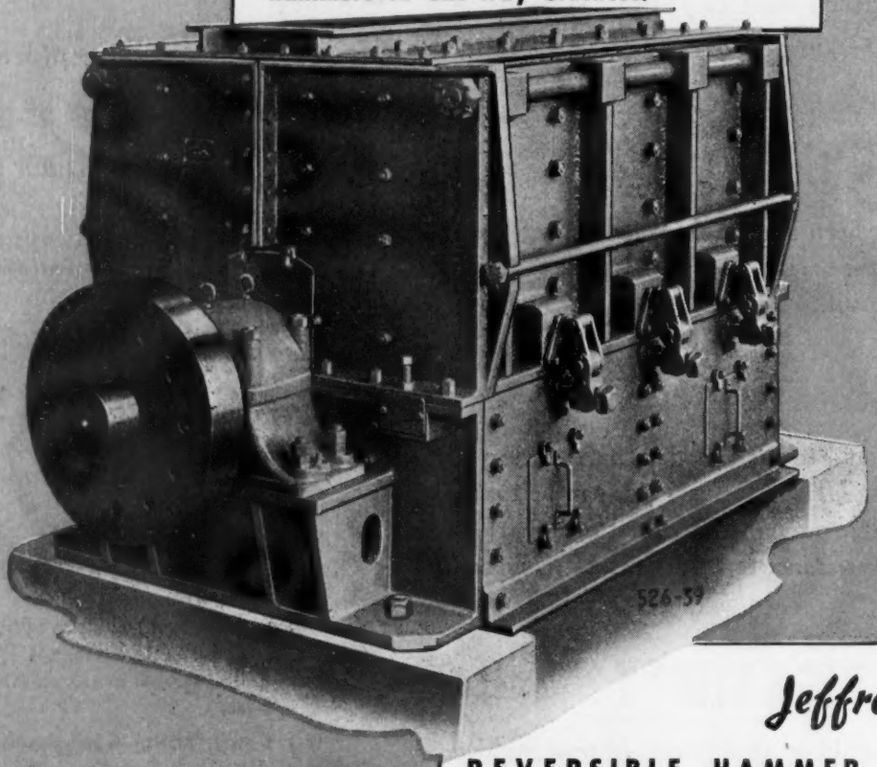
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

REVERSIBLE TO SAVE YOU TIME



The reversible feature of this Jeffrey Heavy Duty Hammer Crusher saves 50% of the time ordinarily required to turn hammers in one-way crushers.



Sizes efficiently down to 85% minus ⅛ inch.

Jeffrey

REVERSIBLE HAMMER CRUSHER

Saves time, more economical and better sized product where coal is prepared for making metallurgical coke. Capacities up to 300 T.P.H.

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ESTABLISHED 1877

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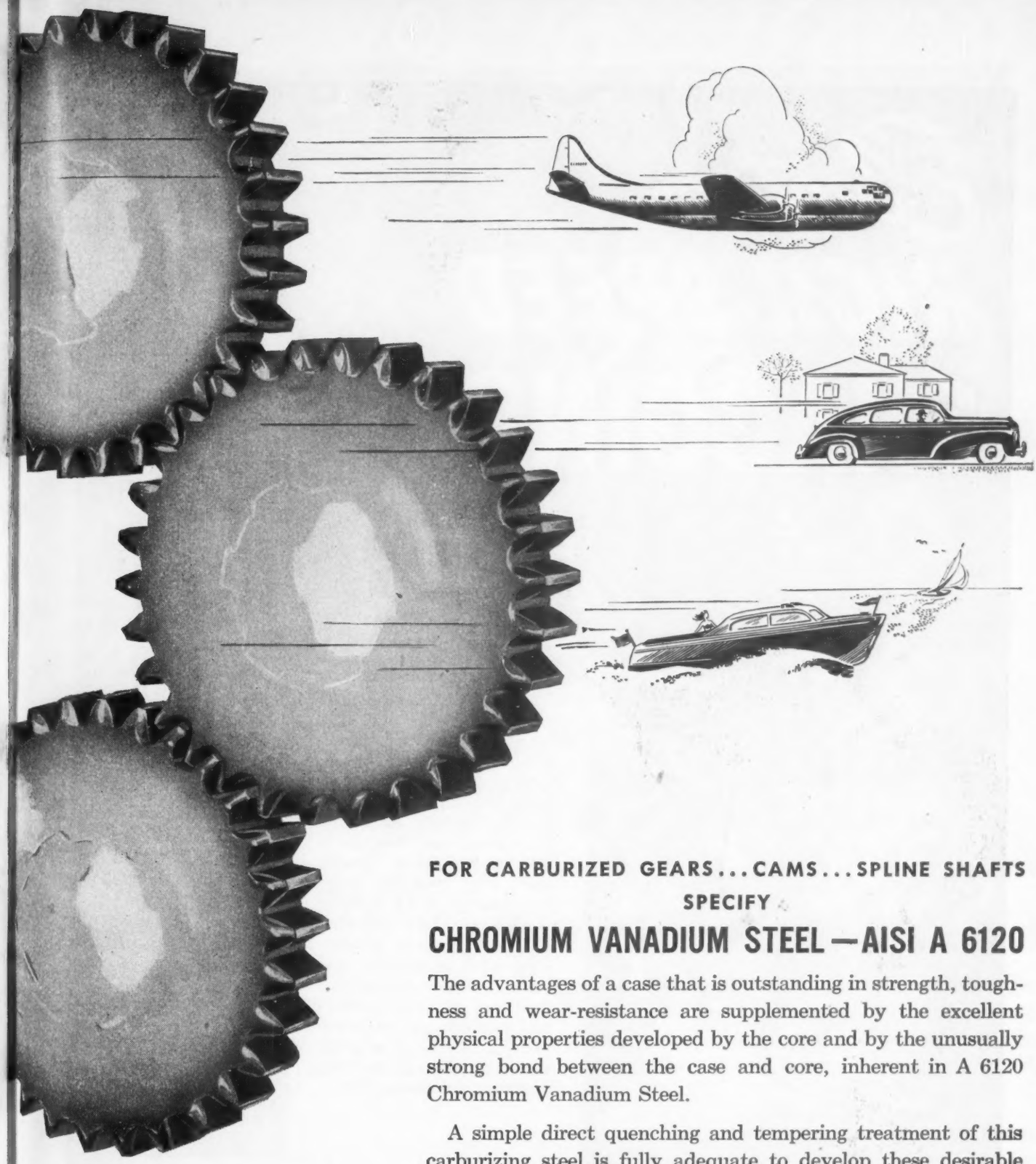

FOR CARBURIZED GEARS...CAMS...SPLINE SHAFTS

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CHROMIUM VANADIUM STEEL—AISI A 6120

The advantages of a case that is outstanding in strength, toughness and wear-resistance are supplemented by the excellent physical properties developed by the core and by the unusually strong bond between the case and core, inherent in A 6120 Chromium Vanadium Steel.

A simple direct quenching and tempering treatment of this carburizing steel is fully adequate to develop these desirable characteristics.

If you have a problem involving the selection of material for a particular carburized application, we will welcome the opportunity to work with you in solving it.

Makers of FERRO ALLOYS VANCORAM BRAND *CHEMICALS and METALS*

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Frictional heat is no problem with Electro High Speed Snagging Wheels. Long, heat-generating contact is entirely foreign to them. They travel fast. Bite quick and hard. Knock excess metal from castings, forgings, billets, and slabs. Withstand abuse. Defy mechanical and thermal shocks. They work in portable machines, swing frames or floor stands to increase production, save time and cut costs. We'll gladly send an engineer to prove all claims in an operating demonstration.

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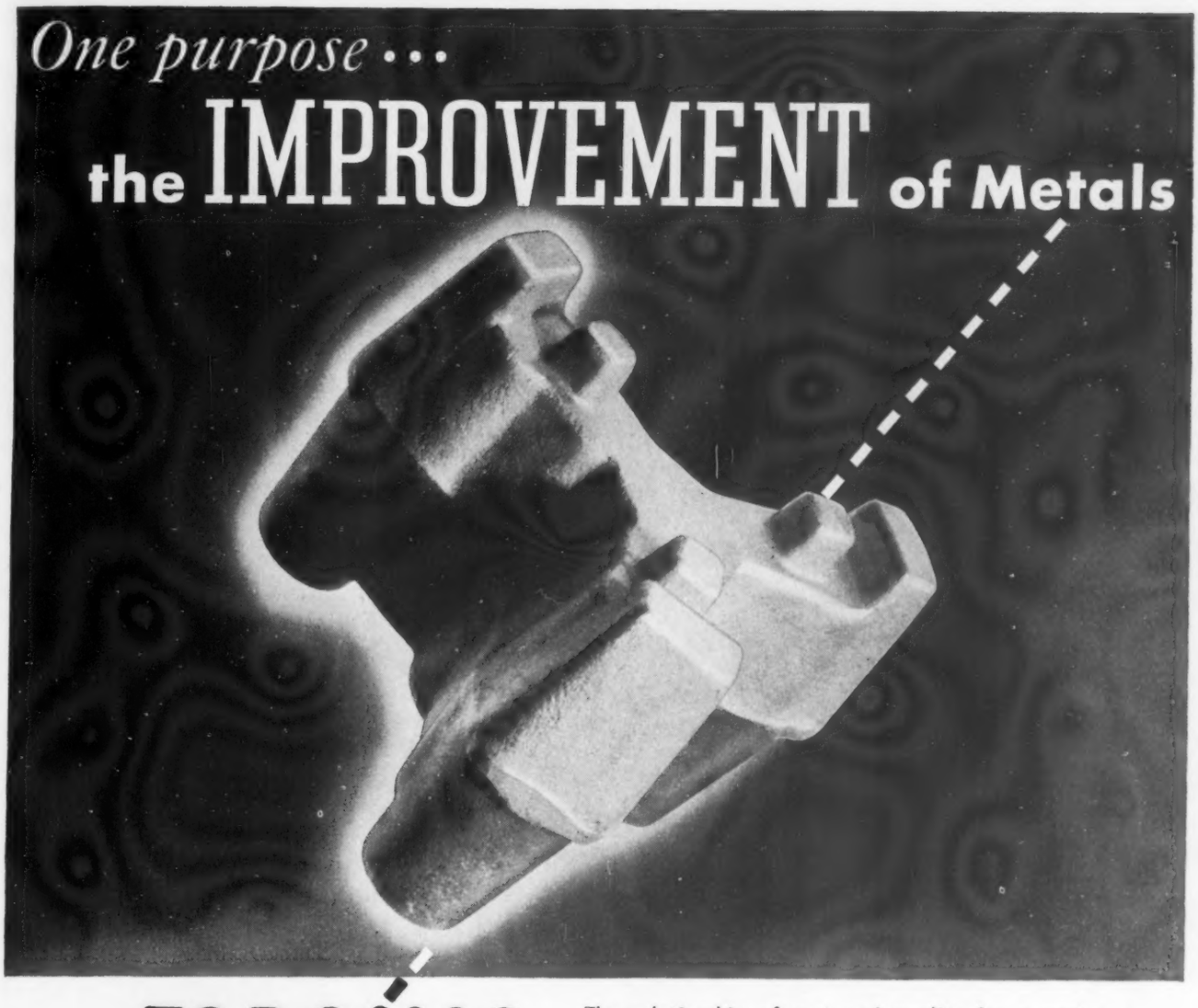
One purpose . . .

the IMPROVEMENT of Metals



BY FORGING

The relationship of cost and quality for a part should not be unbalanced. Whatever the shape, size, weight or design of a part, the primary objective of the IMPROVEMENT OF METALS BY FORGING is always to develop fully the metal quality required to meet a specific service condition. The cost, as well as the quality, of a forging is determined by its design, the material of which it is made and the production techniques required to form it. Over 32 years of forging production experience equips a Steel Improvement Forging Engineer to advise on how to obtain the maximum IMPROVEMENT OF METALS BY FORGING, a high rate of production, minimum scrap loss and reduction in the cost of machining and processing. Consult a Steel Improvement Forging Engineer about fortifying your product with the metal quality obtainable in forgings.

Reference Data Booklet presents many new ideas on forgings and their applications in many different types of equipment. Copies available to engineers, metallurgists and executives.

DROP FORGINGS

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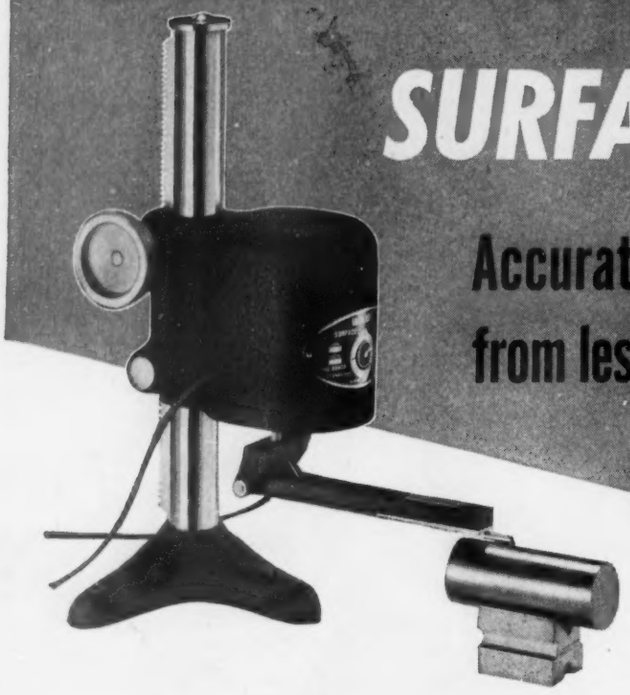
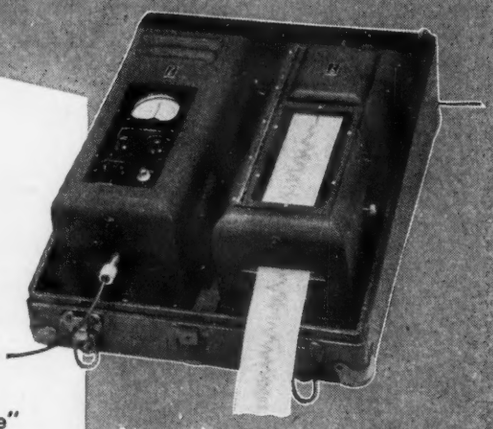
Accurately checks surface finishes from less than 1 to 5000 microinches!





Permanent, instantaneous direct-inking oscillograph chart record is obtained by exploring surface with fine diamond point—the motion of which is magnified and recorded on a moving paper chart. In cases where "hill and dale" chart profiles are not needed, the Brush "RMS" meter provides an instant visual check of "RMS" surface roughness.

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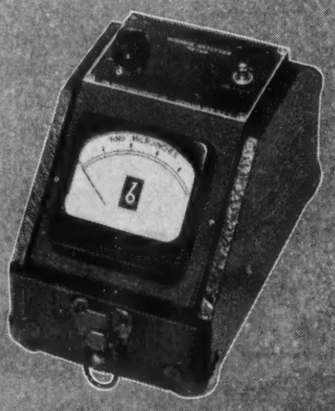
THE SURFACE ANALYZER can help serve your production needs in checking surface irregularities. Write today for demonstration by our representative.

***New!* Magnetic Oscillograph**

Gives *instantaneous, permanent, ink-on-paper* chart records. Recordings may be stopped for notations. Accurate under a wide range of temperature conditions.



***New!* "RMS" Meter**

Provides constant visual check of "RMS" surface roughness. Easy to read.

*Trade Mark Reg. U. S. Pat. Off.

THE BRUSH DEVELOPMENT CO.

3405 Perkins Avenue
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Enduro Pays in many ways

Republic ENDURO Stainless Steel—the metal which possesses exceptional resistance to intense heat and severe corrosion—is the ideal material for many different types of high temperature equipment.

ENDURO possesses high creep strength—and resists scaling in high temperature applications—thereby effecting substantial savings in both equipment maintenance and replacement costs.

For complete details about ENDURO Stainless Steel, including a list of the many different analyses and their corresponding physical properties, write directly to:

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
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- Improved Employee Relations
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- Strong—Long Lasting
- Resistant to Rust and Corrosion
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- Easy to Fabricate
- Universal Acceptance
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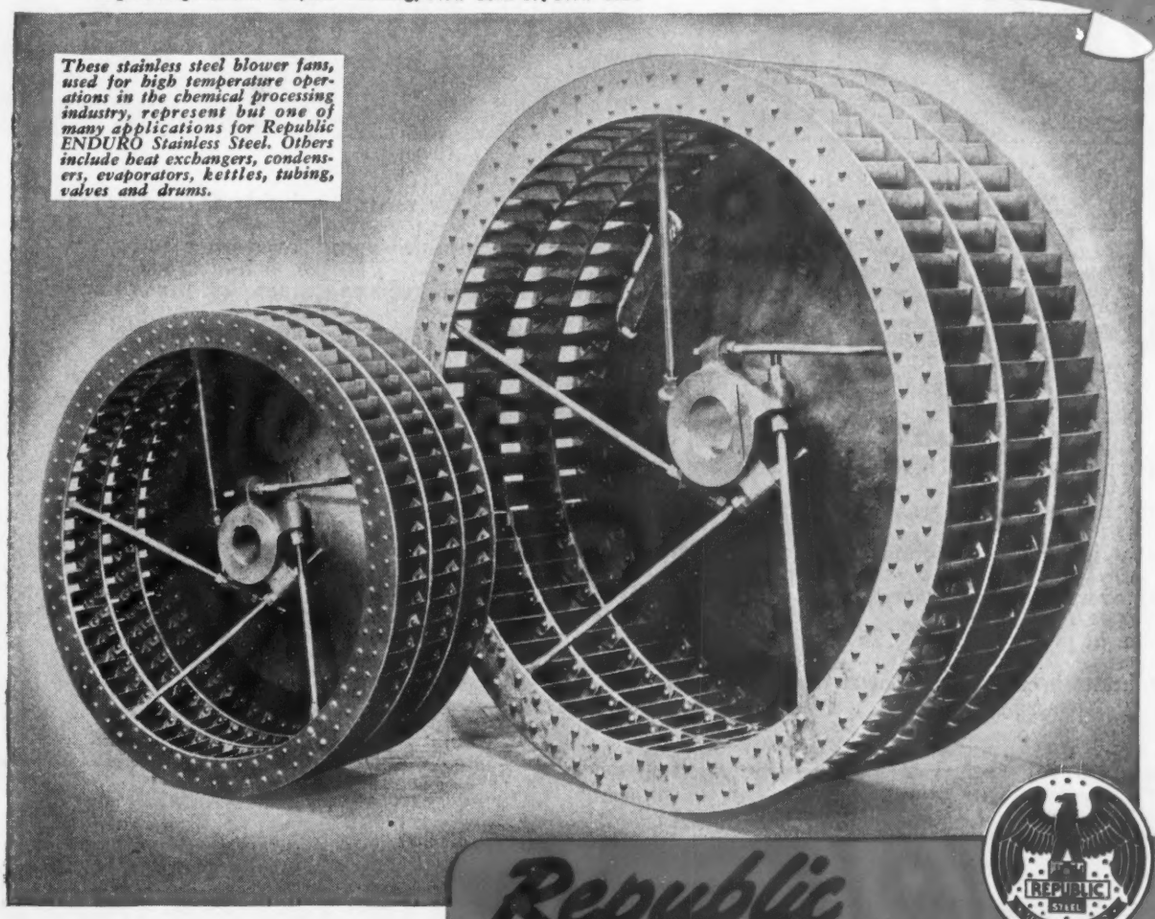

These stainless steel blower fans, used for high temperature operations in the chemical processing industry, represent but one of many applications for Republic ENDURO Stainless Steel. Others include heat exchangers, condensers, evaporators, kettles, tubing, valves and drums.

Republic
ENDURO STAINLESS STEEL
Reg. U. S. Pat. Off.

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

No larger than a man's fist, but packed with power . . . that's the new PESCO general-purpose hydraulic pump for operation of tractor implements, industrial lift trucks, road machinery and other industrial applications. Here is a pump that weighs only 2½ pounds and is only 4 inches long overall, but will pump 2½ g.p.m. at 2800 r.p.m. at pressures up to 1500 p.s.i., and boasts a volumetric efficiency of better than 90 per cent.

Designed for mounting inside or outside the reservoir tank, this pump saves space and when mounted inside reduces the amount of plumbing required. It features *Pressure Loading*, the exclusive PESCO development which *automatically* maintains minimum clearance between pump gears and bearings, making possible continuous high operating efficiencies over a wide range of temperature and speeds. It can be belt, gear, or chain driven, or directly coupled. For complete information, write today for Bulletin No. 115 to Department 7-K.

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MANUFACTURERS OF BW SUPERCHARGERS

G O V E R N M E N T - O W N E D

STEEL PLANT

FOR SALE or LEASE

GOVERNMENT OWNED
SURPLUS PLANTS

The War Assets Administration invites parties interested in the purchase or lease of the South Chicago Steel Plant, owned by the Government, to enter into negotiations with its Iron and Steel Branch at Washington, at the address below, either by letter or conference. This plant is now being operated by lessee under an interim lease arrangement running from month to month and terminable on thirty days notice.

PLANT DESCRIPTION

(Known as Republic Steel Corp. — Plancor 422)

LOCATION: South Chicago, Illinois
LAND: Approx. 160 Acres
BUILDINGS: 27 Major and 28 Minor Buildings
STORAGE YARD: For Iron Ore, Coal and Limestone
COKE PLANT: Capacity—405,000 Net Tons
BY PRODUCT PLANT: Coal Chemical and Benzol Plants
SINTERING PLANT: Capacity—336,000 Net Tons
OPEN HEARTH DEPARTMENT: 4—200 Ton Furnaces
ELECTRIC FURNACE DEPARTMENT: 9—70 Ton Furnaces
BLOOMING MILL: 44"; Capacity—960,000 Net Tons
BAR MILL: 36"—32"; Capacity—480,000 Net Tons
TRANSPORTATION: Rail and Water
WATER SUPPLY: River and City Mains
POWER: Purchased
GAS: Natural Gas—Purchased

The War Assets Administration is seeking to dispose of this plant on a competitive negotiated basis at the earliest possible date. When it appears that negotiations will result in a reasonably satisfactory return to the Government, a cut-off date for any further negotiations and delivery of negotiated bids will be established and all bidders and other interested parties will be given advance notice of such date. Information on this plant can be secured by addressing inquiries to the address below.

A previous advertisement of this plant invited sealed bids for its purchase or lease. Sealed bids received as a result of the previous advertisement have been rejected. This is a re-advertisement for the purchase or lease of the plant and provides for a negotiated purchase or lease instead of sealed bids for purchase or lease.

Address all inquiries and proposals to:

WAR ASSETS ADMINISTRATION

OFFICE OF REAL PROPERTY DISPOSAL

Room 4050, Railroad Retirement Building
Washington 25, D. C.

620

This fact has a definite reason behind it

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No V-Belts built by *anyone* before the war had anywhere near the strength and durability that was found necessary on U. S. Army tanks, tractors and self-propelled big guns during the war. Gates developed these greatly superior V-belts for Army use—and here is why this fact is important to industrial users of V-belts: —

Here is the reason

Every improvement developed by Gates for U. S. Combat Units—and many later improvements, also—have been added, day by day, to the quality of the Standard Gates Vulco Ropes which have been delivered to you.

That is why, *long before the war was over,* you were getting in your Standard Gates Vulco Ropes a product built to far higher service standards than any V-belts ever built by anyone before the war.

And that is not all of the story. Through continuing *specialized* research, the service qualities of these superior Gates Vulco Ropes have been still further improved as all of Gates facilities and energies have been returned to the service of industry.

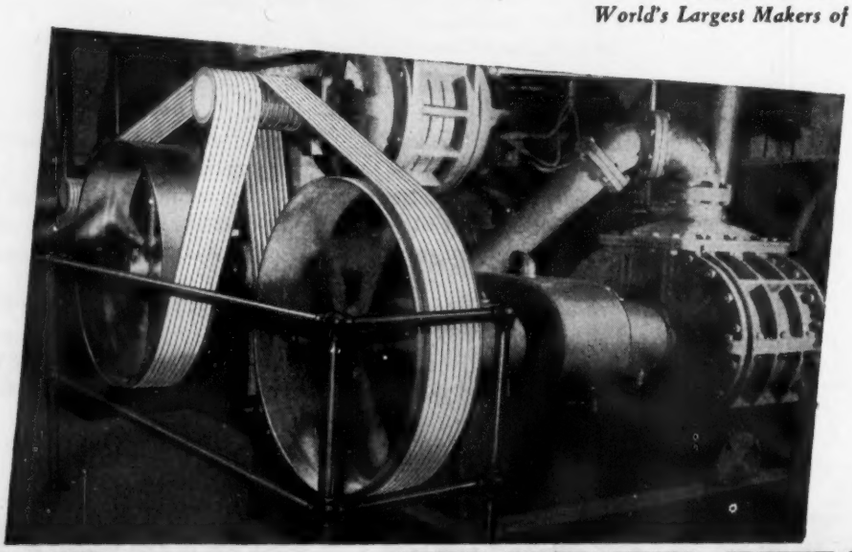
These are the simple reasons why you are finding that your Gates Vulco Ropes are today outperforming any V-Belts you ever used before.

THE GATES RUBBER COMPANY
DENVER, U. S. A.
World's Largest Makers of V-Belts

All Gates V-Belts are Built With *The Patented* CONCAVE SIDE

Gates

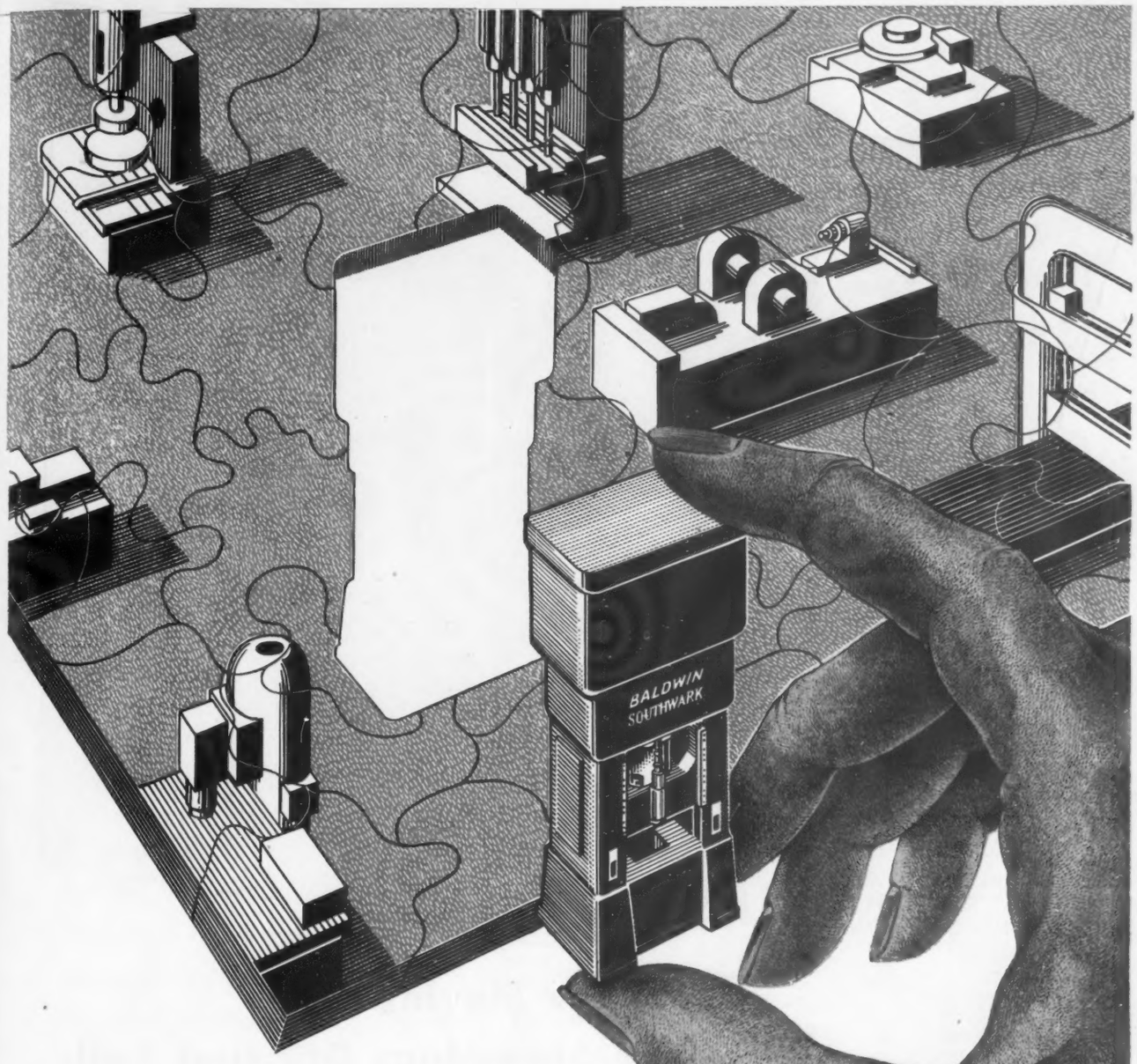
THE MARK OF SPECIALIZED RESEARCH



467

GATES VULCO ROPE DRIVES

Engineering Offices and Jobber Stocks **IN ALL INDUSTRIAL CENTERS** of the U. S. and 71 Foreign Countries



Let a BALDWIN ENGINEER Help You Complete This Picture

You may—with a hydraulic press—be able to turn raw material into a finished product in a single step, eliminating separate operations. You may be able to add strength, utility, and attractiveness to your product, by *forming* instead of *fabricating* it. You may be able to step up output, and reduce rejects, because of the precision with which a press duplicates its production.

A BALDWIN FIELD ENGINEER will help you identify the operations that a Baldwin Hydraulic Press can do faster, better, more profitably.

BALDWIN ENGINEERING will give you the *custom-built* quality and features that can be designed into the *standard* line of Baldwin presses.

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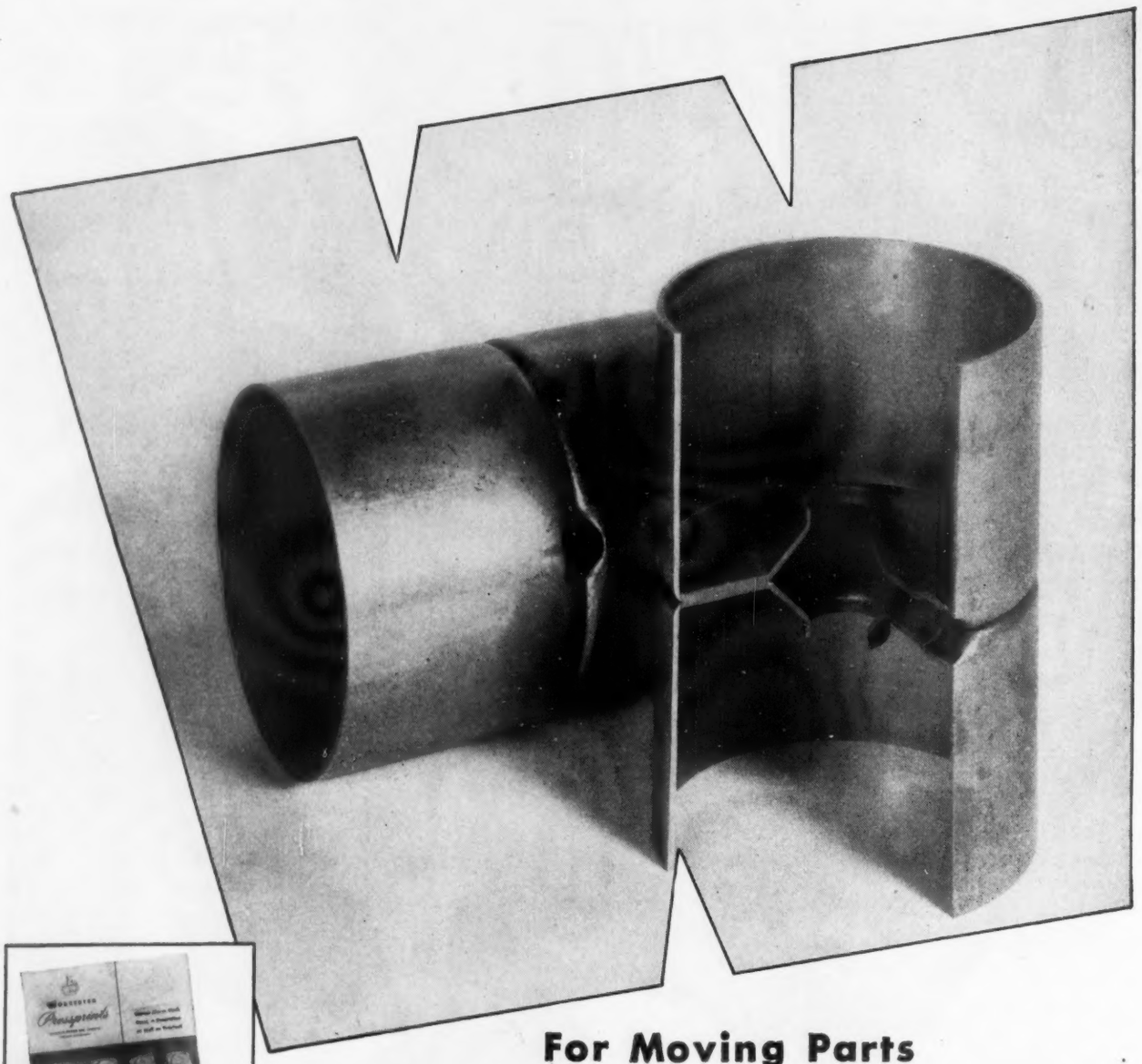

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Presteel Stampings Get First Call

Lighter, stronger take-up rolls (idler pulleys) are demanded by the users of Fletcher Works textile machinery. To turn at high speeds, these welded stamping assemblies are made to close tolerances, are better balanced, require no machining except for tapping the set-screw hole. Lighter, they save waste energy and power; stronger, they provide better impact strength and longer life. For moving parts, *Presteel* stampings of different metals and alloys offer definite advantages and many possibilities. Let us study your parts problems. Redesign for stamping may solve many of them. You take no chances when you specify *Presteel*.

WORCESTER PRESSED STEEL CO.

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YEARS AT IT

IS THE ANSWER!

Like the nonchalant performance of a juggler, the designing of a production heat treat furnace might seem to be fairly simple; yet in either case, satisfactory performance can come only after years of "working at it."

In the case of Holcroft and Company, where each furnace is *designed individually* for the specific application, the juggler's routine is simple by comparison. Yet Holcroft engineers—acknowledged leaders in this specialized field—have exactly the experience required.

During the past 30 years we've designed and constructed thousands of furnaces for the mass-production industries—not modifications of "standard" furnaces, nor furnaces limited by any favoritism as to type of firing or mechanism, but furnaces whose every detail is selected for suitability to the *particular application*. That's why every Holcroft furnace meets all requirements for volume and quality of production, with maximum over-all operating economy.

Consultation with Holcroft on production furnaces of ANY type may well produce the ideal solution to your heat treating problems. Without obligation on your part, get in touch with our nearest office.

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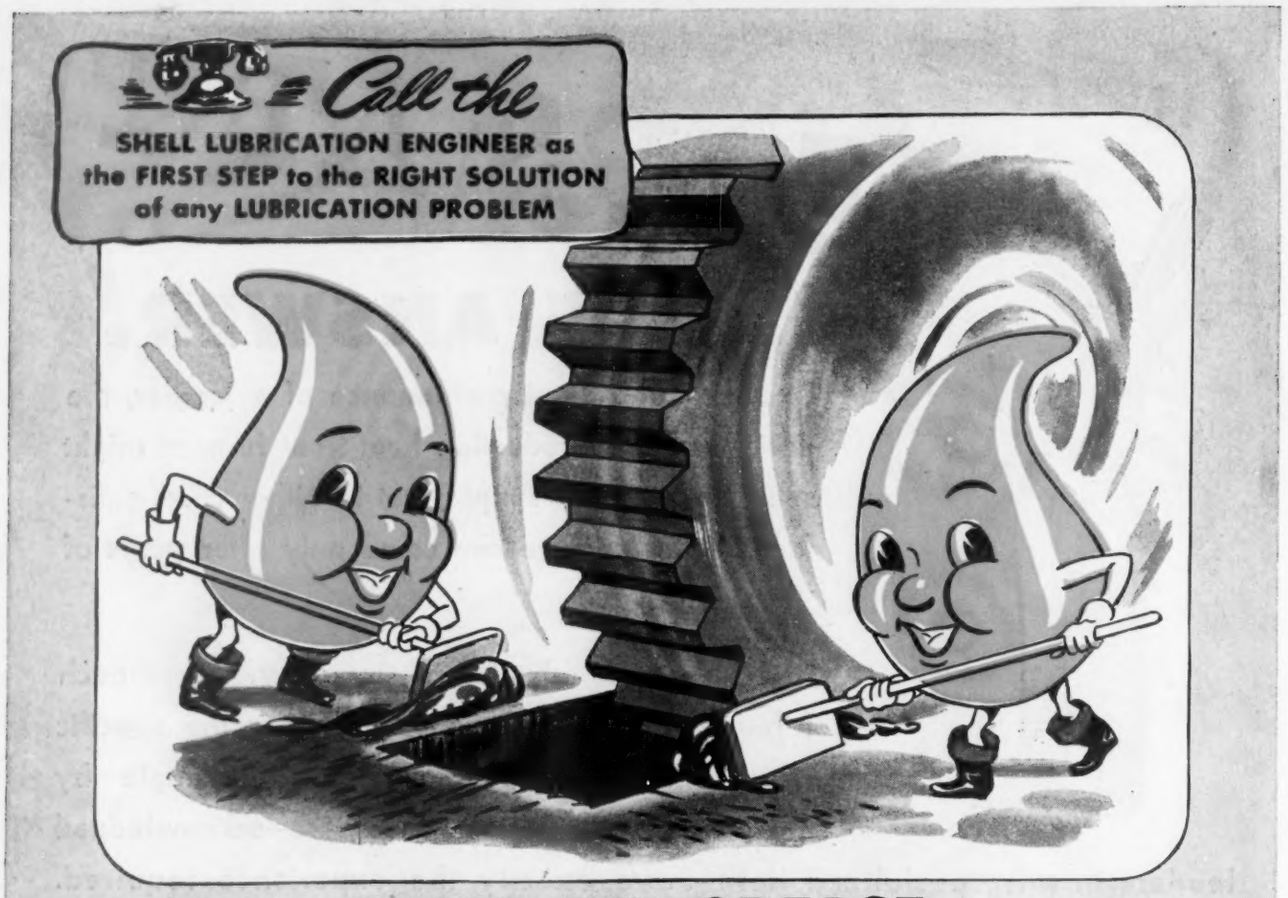

SHELL EXL GREASE OVERCOMES CHANNELING in Gear Case

PROBLEM: Electric hand-held tools designed for infrequent use were being operated continuously in a metal fabrication shop. After two days' service, gears ran hot and tools were noisy. "Channeling" of the grease was recognized as the cause of trouble, and, though a nuisance, a schedule of maintenance overhaul *every other day* had to be maintained.

SOLUTION: When the Shell Lubrication Engineer surveyed the problem, he recommended a Shell EXL Grease. This grease has the consistency required for gear-case use, and also has a "slump" property by which it fills a channel cut by gears. Results were immediate. Gears ran cool, chatter ceased. Maintenance checks and re-greasing were extended to weekly intervals.

CONCLUSION: It pays to consult the Shell Lubrication Engineer, regardless of the nature or size of your lubricating problem. For informative literature about Industrial Greases, write Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, New York or 100 Bush Street, San Francisco 6, California.

SHELL INDUSTRIAL GREASES

SHELL

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Business Staff on Page 4

STEEL

The Magazine of Metalworking and Metalproducing

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NEWS

Metalworking Industry Holds Line as Price Controls Expire 65
Bridges, Buildings Form Bulk of Steel Fabricators' Backlogs 68
British Steel and Heavy Product Exports Top 1938 Monthly Average 70
Enacting of Strategic Materials Stockpiling Act Expected Shortly 71
Pig Iron Production Cut Sharply in May 71
Subsidy Buying of Steel Ended by Government 72
CPA Aid To Buy Steel Urged for Small Firms 73
Five-Year Federal Tax Plan Under Consideration by Joint Committee 74
Bulk of Government-Owned Surplus To Be Liquidated by Early 1947 76
School of Political Action Offers Students Comprehensive Curriculum 78
Small Motor Lack Limiting Heating Industry's Output 84
Republic Steel Adds Facilities at Youngstown 85
Expect Slow Price Rise on the West Coast 86
Expect Pacific Coast Business To Respond Favorably to Decontrol 87
Surplus Machine Tool Sales Hampered by Red Tape 168

TECHNICAL

Wet Belt Machining Reduces Tendency To Weaken Metal Structures 94
Effect of Sulphur on Quality of Sulphite Treated Steels 96
Mass Production To Extend Use of Steel in Modern Building 98
Recent Technical Advances in Electroplating and Organic Coatings 102
Engineering News at a Glance 110
Cored Wire Solder Fluxes and Solders in One Operation 112
New Products 120
Handling Emergencies in Steel Plant Water Service 122

FEATURES

As the Editor Views the News .. 61
Present, Past and Pending 67
Windows of Washington 74
Mirrors of Motordom 81
Activities 84
Men of Industry 88
Obituaries 93
Industrial Equipment 132
The Business Trend 144
Construction and Enterprise 170

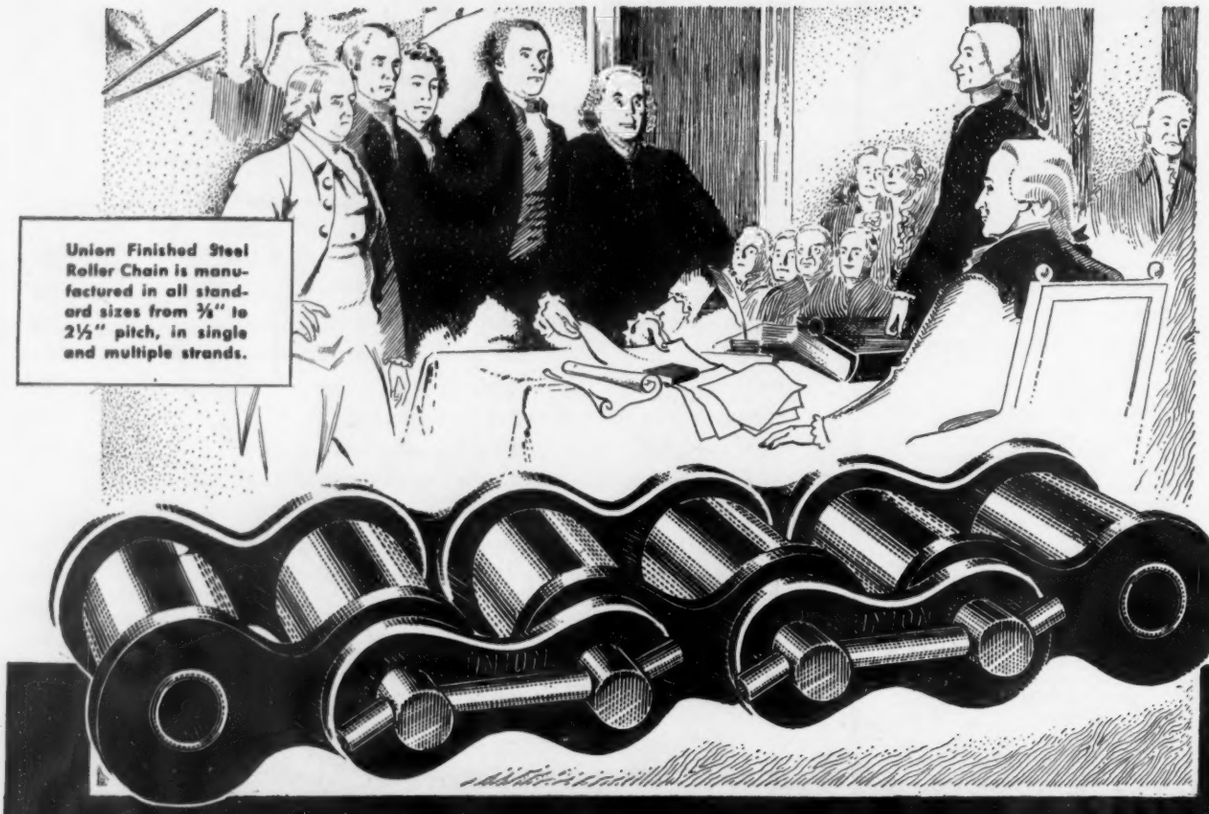
MARKETS

Steel Prices Hold Steady as Controls Are Lifted 149
Market Prices and Composites 150

Index to advertisers 180

NEXT WEEK...

Selecting the Right Electric Motor for the Job
Descaling and Desanding of Gray Iron Castings
Coal Selection as Related To Blast Furnace Fuel Economy
Carbon Rod Rectification Prolongs Life of Salt Bath
Making Railroad Car Wheels at Armco



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ARMY ★ E NAVY

UNION CHAINS

As the EDITOR VIEWS the NEWS

Expect No Miracle

As one goes from nation to nation in Asia, Africa and Europe which were seriously affected by the recent war, it becomes evident that the restoration of economic conditions to a semblance of order depends largely upon the early availability of a few key commodities and services.

If one were able to tabulate the most urgent needs in each nation, food would be first on most of the lists. It claims undisputed priority in an overwhelming majority of the nations.

No single commodity or service has a clear-cut claim to second place. In many nations the most urgent need after food is transportation. In others the second essential is fuel, particularly coal. In others it is steel. Again, strange as it may seem, in some countries where there is considerable unemployment one of the most pressing needs is skilled labor. Likewise competent supervisory and technical personnel is needed acutely in some sections. Similarly, housing is a dire necessity in many cities not only in the war ravaged areas of Asia and Europe but also in numerous countries including the United States which escaped direct damage from combat.

All of these essentials which are secondary to food are so interdependent that it is difficult to place a definite priority on any one of them. For instance, in areas where transportation is proclaimed to be the principal bottleneck, the key to easing the situation may be an immediate supply of coal, steel rails for roadbed, boiler tubes for locomotives or tires for driving wheels.

In reverse, where coal may be the bottleneck, the collapse of rail transportation from mine or seaport to points of heavy fuel consumption may be the chief deterrent. Again, where shortage of steel appears to be the principal obstacle to rapid rehabilitation, it is more than likely that shortage of fuel, breakdown of transportation or inadequate manpower is the factor that is retarding production of the needed steel. In short, no one of these problems can be solved unless other contingent problems can be solved concurrently.

These complexities are formidable in themselves but they are made even more difficult of solution by the absence in many sections of Asia and Europe of stable or dependable local governing agencies. This is a distinct handicap to the representatives of the Allied nations who are attempting to restore order out of economic chaos. The world must be patient in regard to rehabilitation. A miracle can not be performed overnight.

STEEL
July 8, 1946

HOLD THE BALL! Sudden, and generally unexpected, demise of government price control caught most of us flatfooted. Despite the protracted wrangling between the Congress and the administration as to what kind of economic regulation was best for the nation, few expected OPA would be permitted to expire in its entirety.

The President threw a fast one with his veto. As a result the nation for the first time since 1941, temporarily perhaps, is operating in a free economy. Whether Congress will resurrect some kind of control from the ashes of the old law remains to be seen, but in view of the temper of the legislators it does not appear likely President Truman can hope for a much stricter control law than the one he chose to reject.

Surprisingly, first reaction to the demise of OPA has been less alarming than many had been led to believe it would be. Too little time has elapsed since OPA passed out, of course, to provide a conclusive basis for determining the ultimate reaction to elimination of price controls. It is significant, however, that manufacturing industry is holding the price line, hinting of a determination to keep prices

(OVER)

at levels that will encourage, not discourage buying.

It is unfortunate OPA passed out in such disorderly fashion as it did. It would have been better had dissolution been according to set plan. However, events may prove the sudden ending of OPA is just what the country needs to get back on its feet. It is now up to business and industry to show they can get production into high gear, at the same time holding a restraining hand on the forces of inflation, which, admittedly, are tremendous. Here is the opportunity businessmen have been waiting for, and now that they have it, they cannot afford to muff the ball. Their responsibility is too great. —p. 65

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WARNING NOTE: Important gains are being registered by Great Britain in her drive to recover lost markets. In May, for example, British rate of exports passed the 1938 average monthly volume for the first time since the end of the war,

This is a significant accomplishment. But even more significant is the fact British exports in the last six months more than doubled.

Britain's dependence on exports is traditional. If the nation is to regain any substantial measure of her former economic eminence, export trade must be revived on a grand scale. Conscious of this, British industry has been striving desperately to get goods into the world markets as quickly as possible. The success which is attending these efforts provides eloquent testimony to the nation's determination to recoup her fallen fortunes without delay, and despite every obstacle.

It also sounds a warning note to America that it cannot slight in any degree her foreign trade if the nation's manufacturers are to successfully compete in future world markets. —p. 70

• • •

STEEL IN BUILDING: Research in steel housing, temporarily stalled at war's beginning is again gaining momentum. Present fast-reviving field of modern building construction is being thoroughly ferreted for steel markets by farsighted producers.

With steelmaking facilities booked to capacity, various market development organizations see future applications for mass production techniques in turning out lightweight steel sections for both commercial and residential buildings. Uniformity of product lends itself readily to the production of identical unit sections which can be cold-formed of strip and sheet steel to provide the basic building structure.

In keeping mortar-minded, code-writing city officials informed, the steel industry is wisely coordinating building code activities and turning out a series of bulletins covering steel construction data. —p. 98

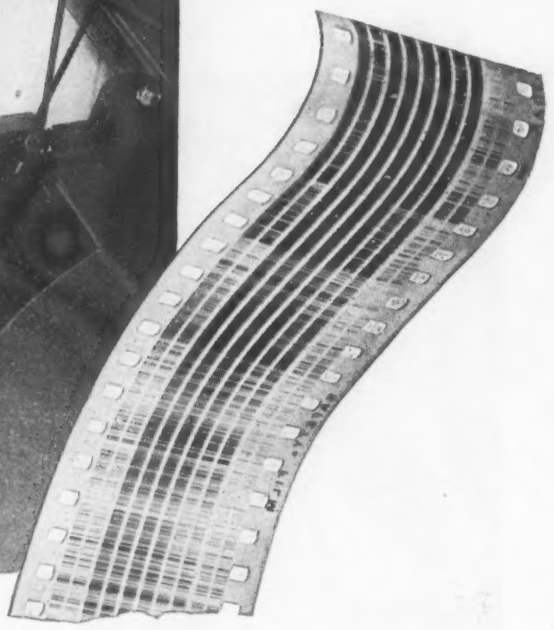
SIGNS OF THE TIMES: Structural steel fabricating industry's order backlog of 600,000 tons, built up over the first half of the year (p. 68), is due for some shrinkage over coming months because of tightening governmental restrictions on nonresidential building. . . . As expected, data for May show pig iron production (p. 71) fell off sharply from the preceding month, the drop being occasioned by blowing out or banking of blast furnaces because of the coal shortage due to the miners' strike. . . . Subsidy buying of semifinished steel by the Reconstruction Finance Corp. for resale to several nonintegrated sheet steel producers ended with demise of OPA (p. 72). Whether this assistance will be revived depends upon future price control legislation and whether interpretation of the Second War Powers Act extender shows such help to industry is legal. . . . Holiday observance last week prevented attainment of a new high postwar automobile production plane (p. 81). Over a million cars and trucks were produced in the first half of this year, and indications are ensuing six months will see completion of another 2,600,000 units. . . . Design of a new cored wire solder which includes flux in four channels on the outside of the wire (p. 112) eliminates skipspots and makes it possible to flux and solder in one operation. . . . Congress has under consideration adoption of a five-year federal tax plan (p. 74) to replace the present system of revising taxes annually. Such a plan would enable business to figure tax commitments long in advance, making possible use of funds to best possible advantage. . . . In wet belt machining (p. 95) cutting action of an abrasive belt traveling at speeds of 2500 to 4500 surface feet per minute eliminates burrs and overcomes tendencies to weaken structure of tempered materials often caused by other methods of stock removal. . . . Shortage of fractional horsepower motors is major obstacle preventing heating and ventilating industry (p. 84) from reaching capacity output of $750 million a year. . . . Important addition to finished steel producing facilities in the Youngstown district (p. 85) is under way at plant of Republic Steel Corp. where installation of a new 48-inch strip mill nears completion. . . . Through "site sales" (p. 76) government authorities hope to liquidate the great bulk of surplus property, other than plants and real estate, by the early months of next year. . . . One of the largest pipe orders ever placed (p. 72) went to the A. O. Smith Corp., Milwaukee, last week. It calls for 1285 miles of 26 in. pipe for a natural gas line from Texas to Detroit. Over 200,000 tons of steel will be required.

E. C. Shaner

EDITOR-IN-CHIEF

Examination of the spectrum emanating from the vaporization of the steel sample in an electric arc quickly reveals the chemical content of the sample.

A spectrographic film provides a permanent record of each sample.



How the Spectrograph Helps Maintain Inland Quality

Every open hearth heat run at the Inland mills is checked not only by routine control methods of chemical analysis, but also in a special spectrographic laboratory.

Inland was one of the first steel mills in America to install and develop technique for using the spectrograph in control of quality. An important advantage of this method is the rapidity with which tests can be made. At any stage during the working of a heat a melter can have an accurate check on the chemical content within ten minutes after a sample is delivered to the laboratory. Not only do these frequent and rapid tests assure the uniform high quality of Inland steel, but they also help maintain capacity production—a vital necessity in this time of war.

The spectrographic analysis is only one of the many checks and balances used by Inland in the production of steel—it is only one of the numerous quality control methods adopted by Inland after rigid tests prove their practicability.

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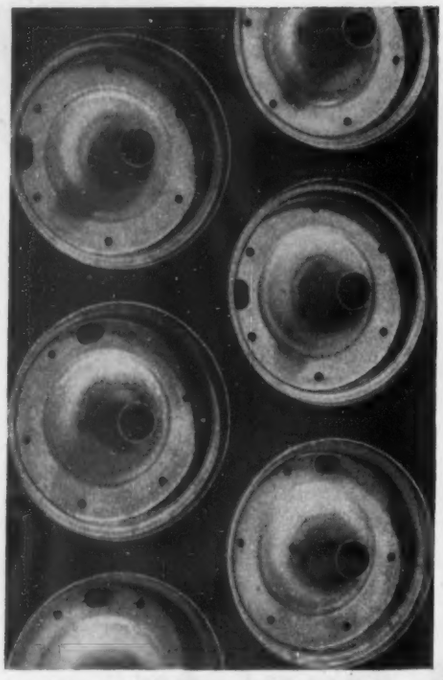
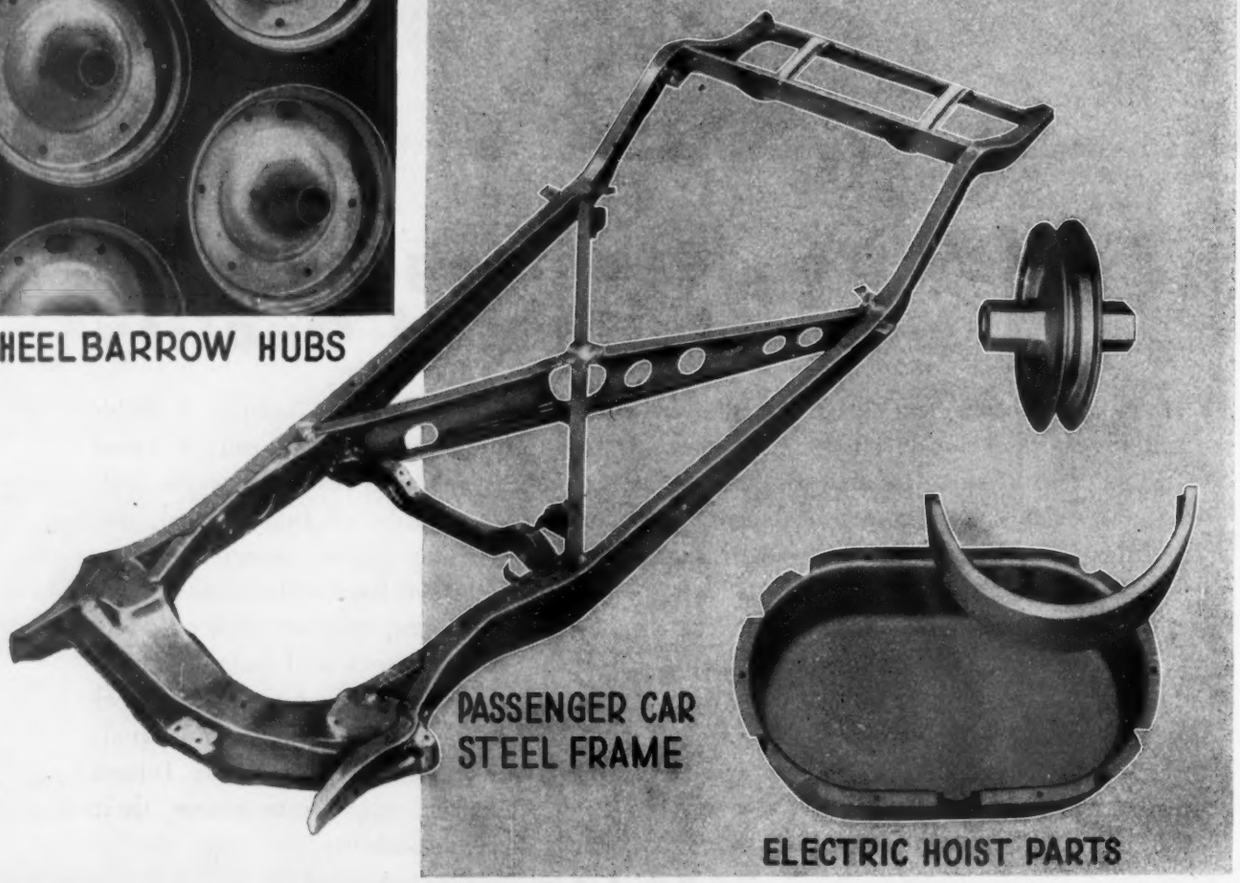


WHEELBARROW HUBS



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Big Four of Congress meet to discuss what action shall be taken to control prices, following the President's veto of the modified OPA bill. Left to right: House Democratic Leader John W. McCormack, Massachusetts; Speaker of the House Sam Rayburn, Texas; Senate Democratic Leader Alben Barkley; Senate President Kenneth McKellar. NEA photo

Metalworking Industry Holds Line As Price Controls Expire

Industry adopts cautious attitude as free markets return—at least temporarily. Majority of companies indicate intention of not increasing prices now. Nonferrous metals rise as subsidy program ends

STEEL and metalworking companies held the line last week on prices in the first free market in more than five years.

Expiration of price control—perhaps temporary—brought a cautious attitude to the market place. Hundreds of companies and trade associations voluntarily pledged themselves to maintain prices for the present and until the politically-bungled situation was clarified.

The price stability that prevailed on basic metal products following the demise of the Office of Price Administration gave the lie to the semi-hysterical predictions of immediate skyrocketing of prices by proponents of continued price control. It was noted that the price increases that followed the President's veto of the OPA extender were in rents, some food items and other products offered for sale or let by individual entrepreneurs. The prices of products offered by the larger, well-organized businesses generally held across the board.

A survey of metalworking companies by STEEL indicated a large majority contemplated no increases in prices in the immediate future. Of the minority that believed some price advances would be necessary, most said the increases would be less than 10 per cent. Only a few indicated price advances ranging from 10 to 25 per cent.

Generally manufacturers indicated their intention of subordinating immediate profits to price stability.

Some upward adjustments will be made as the future of price control or freedom from such control is clarified. Many products have been produced at a loss or at such slight profit margins as to make their manufacture unattractive. These products naturally must be adjusted upward if the demand for them is to be met, but on the basis of manufacturers' declarations last week, the adjustments will be moderate.

Most major steel companies withheld official comment pending clarification of the price control situation. For the present, prices generally are being held at the same levels existing under OPA control.

Wheeling Steel Corp., Wheeling, W. Va., said: "Though somewhat early to predict accurately what will result from

the removal of price controls, little or no immediate effect is expected by officials of Wheeling Steel Corp., and operations will be carried out in accordance with schedules . . . If costs of production remain fairly constant, no reason can be seen for drastic price increases. Certainly no attempt is foreseen to withhold production in anticipation of higher prices.

"If present events are indicative of what will happen in the future, steel prices should remain reasonably stable. Reliable statistics reveal that even today the dollar, based on 1939, buys 85 cents worth of steel, whereas in terms of many other products, particularly foodstuffs, the same dollar is worth only from 40 to 50 cents. Despite heavy outlays for capital equipment, huge overhead charges and highly involved technical and complicated manufacturing processes, steel has always been a low-cost, economical and serviceable commodity. Never has it been out of reach of the consumer.

"For example, recent price increase in steel resulted in an added cost of $3.83 in cold-rolled sheets used in an automobile. In an office desk using 300 pounds of steel, the extra cost of steel amounted to only 67½ cents. In a gas range of 200 pounds of steel, the extra cost of steel amounted to 45 cents. These figures clearly indicate that only the most drastic increases in prices of steel would be reflected in the sales price of finished products."

Costs of the steel industry have been mounting steadily in recent weeks, largely as result of wage increases granted in other industries under government pressure. The cost of iron ore has been increased 50 cents a ton, following an 18½-cent hourly wage increase granted ore miners. The price of bituminous coal has increased an average of 40½ cents a ton as result of the wage and other concessions granted the coal miners. Freight costs have advanced as result of the interim rate increase granted the railroads.

These are some of the more important steelmaking cost factors increased since the steel industry was granted an average $5 a ton price increase last February. That increase was considered insufficient to compensate producers for the wage concessions granted steelworkers and for higher costs absorbed during the war. Statisticians estimated the steel wage increase absorbed $3.70 a ton of the price increase, leaving only $1.30 to compensate for earlier wage and other cost increases. Prior to the last steel wage increase, OPA had conceded the steel industry was entitled to a $2-$2.50 price increase.

Chester Bowles, economic stabilizer who resigned when it became apparent Congress would not enact a price control bill to his liking, last week was grimly pessimistic over the future course of prices. NEA photo

When upward adjustments in steel prices are made, it is likely that reinforcing bars, galvanized sheets, tin plate, spring wire, nails, a few other wire products and semifinished will be among the first to be affected. These all are considered "squeeze" items under the present price structure on which the producers make little or no profit.

Pig iron also is likely to come in for an increase. In fact, higher prices for pig iron were being negotiated at the time of OPA's expiration and OPA was reported to have agreed to advance prices.

One southern producer of pig iron was granted authority in June to increase prices of southern iron by $4 a ton and had placed the higher prices in effect. Last week, another southern producer raised iron prices by $3 a ton.

Nonferrous metals reacted quickly to the removal of OPA and the end of the Premium Price Plan which cut off $100 million in subsidies annually. Zinc rose 1¼ cents a pound to 9½ cents for prime western slab, East St. Louis, Ill. Lead also rose 1¼ cents to 9½ cents a pound at New York. Platinum, which has been decontrolled for several months, moved up to $67-$70 an ounce, double the old OPA ceiling. A move was underway by western congressmen last week to restore the subsidy program for nonferrous metals.

Companies producing metal end products generally indicated their intention to hold prices at existing levels for the present. Many stated they would make no increases unless forced to do so by rising labor, materials or other costs.

A prime factor leading to this decision is the manufacturers' desire for genuine price stability and the fear that by raising prices they might price themselves out of the market. Then, too, many manufacturers already had been granted price relief by OPA or had been decontrolled. Another factor entering their decision was the fact that the freedom which returned to the market place last week was a kind of freedom under the sword of Damocles — and manufacturers realized that sharp and sudden price increases would bring strict new controls from Washington.

The situation in leading metal products last week:

ELECTRICAL EQUIPMENT — Leading producers moved to hold prices at or very near old levels. Westinghouse Electric Corp., Pittsburgh, said it "will exercise great restraint in raising the prices of its products in the period ahead," with or without OPA controls

in effect. "We realize fully that only by increasing production of electrical equipment—heavy apparatus as well as durable consumer items—to the point where the supply is in balance with the demand, will real control be achieved by the force of natural competition."

The New York appliance distributing branch of General Electric Co. wired its dealers: "Present price law status in our opinion is justification for immediate price changes. We will continue our past policy of making immediate shipment of all appliances as rapidly as received from factories. We request each dealer to hold current national consumer prices."

GEARS—Thomas J. Bannan, president, American Gear Manufacturers Association, recommended to members that "we carry on without any change in our pricing procedure until this situation is clarified. It would be unfortunate if our industry should find itself the target for criticism because of immediate changes, and, further than that, it would be unfortunate if we should be responsible for any changes pointing toward upsetting the country's economy."

FARM EQUIPMENT — International Harvester Co. sent telegrams to all its dealers asking them to maintain present prices until further announcement by the company. Although the company management says several items in their present production line are being sold at a loss, no immediate action is contemplated until government pricing policies are clarified.

AUTOMOBILES—Although automakers declined to make official statements as to policy, representative spokesmen indicated their prices to dealers will remain unchanged for the time being. Dealers have been urged by national and regional associations to hold retail prices at the old OPA ceilings pending Congressional action extending or definitely killing the price agency.

DAIRY MACHINERY — Manufacturers are not expected to make any increases immediately. Industry received price relief from OPA to the extent of 8 per cent and competitive conditions are expected to hold prices close to present levels.

MACHINE TOOLS — Builders were granted permission to up prices by 20 per cent last April on standard tools and more on special items. Average increase since that time is estimated at only 6 per cent. Expiration of OPA expected to have little, if any immediate effect.

BOLTS, NUTS, SCREWS, RIVETS—Permission had been received to advance prices 12 cents effective July 1. Producers last week had not decided what price level will be quoted.

WARM AIR FURNACES—Manufacturers received 9 per cent increase some months ago. Competitive conditions expected to hold prices close to present level.

DROP FORGINGS—Industry does not expect to increase prices in immediate future. Granted 16.25 per cent increase over base prices early this year and at same time was decontrolled on all parts for new automobiles.

ENAMELED UTENSILS, GALVANIZED WARES—Manufacturers have not received any price relief and are expected to increase prices moderately on products which have been selling close to or under costs.

FOUNDRY EQUIPMENT—Manufacturers not expected to increase prices, except to correct a few inequities. Industry decontrolled last April.

MALLEABLE CASTINGS — Producers expected to make upward adjustments when government control policy is definitely decided. One large producer has informed customers prices will not be increased before Oct. 1. Many products now being produced on unprofitable basis.

SCREW MACHINE PRODUCTS — Leaders are urging industry to refrain from price increases during next few weeks. They hope an increase in production and accompanying rise in efficiency may make increases unnecessary.

WAREHOUSES—Larger distributors are expected to hold prices at present levels, but some smaller distributors may revise quotations upward. Steel Products Warehouse Association Inc. said its distributors plan to hold the price line.

DIE CASTINGS — Industry decontrolled for almost a year. No change in prices expected.

ALLOY CASTINGS—Decontrolled since May 13. Prices rose slightly before OPA expiration. No further changes contemplated.

SCRAP—Institute of Scrap Iron & Steel Inc. urged dealers to keep scrap flowing to steel mills during period of uncertainty "that the scrap industry may continue to play its role in the attainment of full production of iron and steel."

Present, Past and Pending

■ CPA RULES PRICE ADVANCE NOTICE NECESSARY

WASHINGTON—Civilian Production Administration last week ruled that suppliers who raise prices must give buyers with preference ratings at least seven days in which to agree to new prices. They may not discriminate in price against a rated order.

■ LATH MAKERS CHARGED WITH PRICE FIXING

WASHINGTON—Federal Trade Commission last week charged metal lath manufacturers with fixing and maintaining identical delivered prices. Complaint charged pricing in the industry is predicated on use of basing points which make for prices calculated as though shipments were made from a single point.

■ U. S. STEEL RESUMES OPERATION OF BOSTON WAREHOUSE

BOSTON—United States Steel Supply Co., U. S. Steel subsidiary, last week resumed operation of its local warehouse after more than three and a half years during which time it was in the service of the Navy. C. D. Surette Jr. has been named district manager.

■ LITTLEJOHN MAY HEAD WAR ASSETS ADMINISTRATION

WASHINGTON—Maj. Gen. Robert McG. Littlejohn is expected to be named director of the War Assets Administration by President Truman succeeding Lieut. Gen. E. B. Gregory, resigned.

■ SILVER SHORTAGE HITS GENERAL ELECTRIC CO.

SCHENECTADY—Already severely hampered by steel and copper shortages, the General Electric Co. is faced by a desperate situation as a result of the scarcity of silver.

■ PHILCO LICENSES RADIO CORP. TO USE FM SYSTEM

PHILADELPHIA—In a step of far-reaching importance to the radio industry, Philco Corp. has licensed the Radio Corp. of America to use the Philco advanced FM system and approximately 600 other Philco patents and inventions. The company will grant non-exclusive licenses to other radio and electronic concerns.

■ FOLLANSBEE ACQUIRES WAREHOUSE FACILITIES

PITTSBURGH—Follansbee Metal Warehouses, division of Follansbee Steel Corp., has purchased steel warehouse facilities of Williamson Bros. Co., Bridgeport, Conn.

Bridges, Buildings Form Bulk of Steel Fabricators' Backlogs

Tonnage booked for fabrication over next four months more than double business on hand at beginning of year. Contingency risks of rising steel prices, wages and other costs, materials shortages and lengthening deliveries are industry's most difficult problems

By L. E. BROWNE
Associate Editor, STEEL

Addition to a Buick plant rises at Flint, Mich., part of General Motors $600 million decentralization program

BACKLOG of the structural steel fabricating industry has increased approximately 350,000 tons since January when tonnage booked for fabrication over a four-month period totaled 265,000 tons.

This backlog of more than 600,000 tons, built up in first half, will accelerate less in the next six months due to tightening of authorizations on nonresidential construction. Up to now bookings in the postwar period have exceeded shipments most months, but the two should narrow over the remainder of this year and some excess in shipments over bookings may be expected under current restrictions.

Substantial increase in the backlog has been accomplished in the face of numerous adverse economic factors—higher steel prices, rising shop costs, including wages, material shortages and lengthening deliveries, to mention a few. To an industry normally accepting a contingency risk of three to four months, highly competitive and subject to economic ramifications over which it has limited control, these factors are all-important.

That the industry has made this tonnage gain in the first half, without benefitting from release of full potential volume pent up for the postwar period, is noteworthy.

Stabilization of costs over an extended period is an urgent need, not only for the structural steel fabricator but also the entire construction industry.

What the dollar volume in construction will be this year and over the next five-year period is conjectural. Experts differ widely, but among the most conservative is that of the Bureau of Labor Statistics, $10,924,000,000 average for the first five postwar years. Estimates are being revised and earlier breakdowns as to type indicating structural steel requirements for 1946 at approximately 1,650,000 tons with a five-year average of 2,400,000 tons are in the air. This would not strain capacity for fabricating, estimated at 3,500,000 tons annually, or the rolling mill potential of several times more.

Given material and men, neither fabricating or rolling capacity has ever been overtaxed in recent times, even during years of greatest demand. Best fabricated structural steel year was 1929 when 3,597,825 tons passed through shops.

Bridges and buildings are the bread and butter of this industry and to that fare its members are returning in mounting volume, notably bridges. Industrial construction is exceeding some estimates, despite large tonnage for this class of building for war industrial plants. Many of these structures were special purpose units located at unadvantageous points for economical peacetime production and distribution. Thus industrial building activity is substantially greater than expected. The chemical industry, for example, plans great expansion but will not buy many surplus plants.

Heavy volume of public and engineering work also has accumulated. Delay in getting much of this to the blue-print and bid point is not to be considered too serious, at least while prospective volume of private construction is large. Undue competition for manpower and materials will be avoided and a substantial part of public work might well be geared to fill gaps later in the construction program. If pushed too fast during the earlier transition period, public works will further contribute to confusion and shortages.

Flexibility has been demonstrated by the structural fabricating industry, in shipbuilding and other assembly, but there is substantial decline in joining by welding, due to the present predominence of bridges and buildings which involve more field work. Welding has retained some gains in shop fabrication, but the prewar normal ratio with rivets and bolts is returning.

In field work and erecting, welding costs are generally higher. However, weight-saving in material is an attractive advantage. Greater latitude in design is permitted, but decline in demand for duplicate products in quantity has reduced welding activity.

All this enters into the overall cost factor, somewhat disregarded when the government was buying most tonnage fabricated. Probably the outlook for welding is most favorable in the oil industry.

Use of bolts and nuts in field connections is not new, but these fasteners were utilized in many war structures and are maintaining ground gained. An outstanding example is the Stuyvesant Town

housing development, New York, where many thousands of bolts are specified for field work. Steel is shop riveted but field bolted.

In some shape sizes where wartime simplification was extreme or overdone, fabricators are returning to sizes which have not been rolled for some years, but the revised standardization of sizes is meeting with satisfaction.

For some types of construction an escalator clause protecting contractors and suppliers of materials, including fabricated structural steel, against interim price increases and costs, are operative. This is not permitted in most public work and the cost-plus fee contract is also banned more generally. Reluctant to risk too far ahead, there is a dearth of bids on considerable inquiry; highway, bridge and other engineering projects are being figured 50 per cent and more higher than prewar costs, contractors allowing wide margins for safety and unforseen costs.

Now definitely a part of the postwar program, federal aid highways during the next three years may require in the vicinity of 1,335,000 tons. Railroads and public utilities want more tonnage than during war years, demand having backed up in large volume. Shipbuilding takes much less.

Strong recovery by privately-financed industrial building will continue well into this year. Military and government-financed industrial construction is down sharply, military by at least 76 per cent and industrial by 90 per cent.

All types of industrial buildings to meet accumulated demand for civilian products are appearing in greater volume. The $600 million decentralization program of General Motors Corp., to illustrate, brought out heavy inquiry.

Most Jobs Relatively Small

Size of the individual job in tons is averaging somewhat smaller; contracts up to 1000 tons account for more than half the total. There is a drastic decline in largest tonnages, 10,000 tons or more; those under 50 tons account for approximately 14 per cent of the whole.

With return to bridges and buildings, there is a drastic decline, almost to the vanishing point, in fabrication of a wide variety of other products. This type of work, stemming from war demand, largely shipbuilding, reached 345,000 tons in 1944, but by last quarter, 1945, had largely disappeared from backlogs.

This included substantial welded tonnage and there has been a considerable increase in welding capacity. Decline in this class of work accounts for less welding. Advance and improvement in the practice of electric-arc welding is not lost, however, on architects and engineers in more freedom of design for structures and buildings. An outstanding postwar project is a 6000-ton all-welded building being erected at Syracuse, N. Y., for General Electric Co.

Confusion continues in the field of designing and detailing compression members in engineering structures. As new materials are produced and proposed for structural use this becomes more complex. Efforts are being made to clarify practice among specification bodies in an attempt to make uniform approach in the field of metallic compression members. Currently there is a maze of different column formulas to the same condition while others use the same formula to cover quite different conditions.

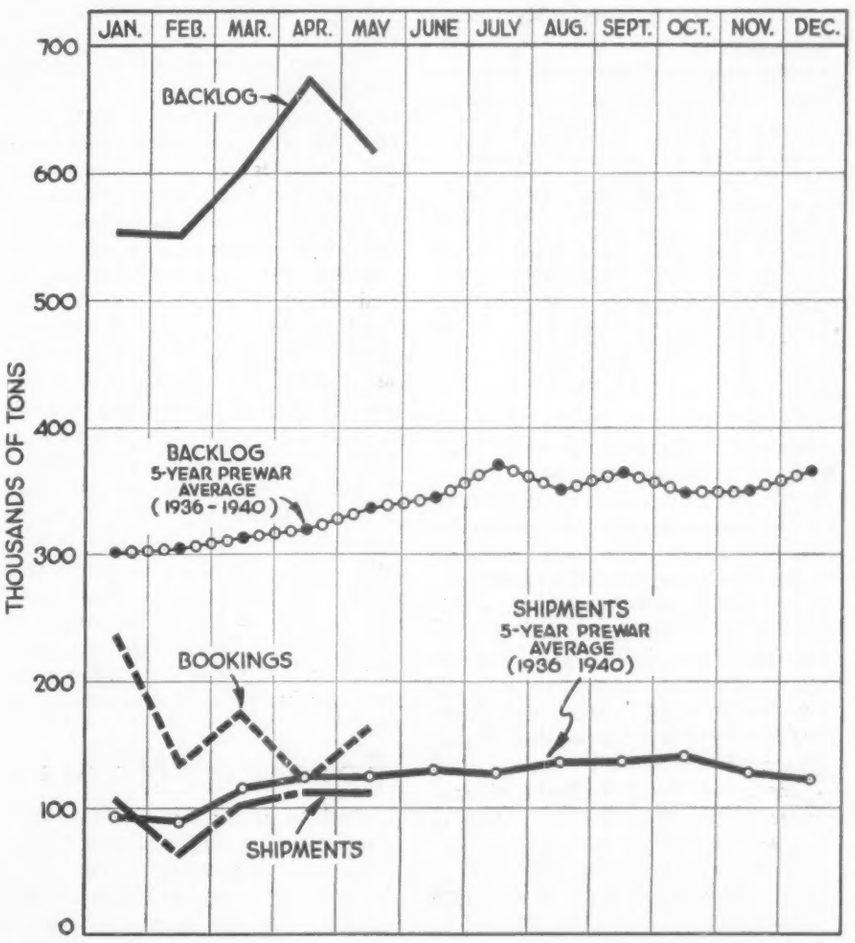
Instruments have been designed and built for equipping the Golden Gate bridge with means of recording frequency and amplitude of movements in that structure by the committee on field observation, American Institute of Steel Construction Inc. Contracts were let for additions to the stiffening system, Whitestone bridge, New York, and the feasibility of gathering data in addition to that contained in a report on oscillation in that structure is considered. This would give comparative data on the relative behavior of the bridge before and after it was reinforced.

Although still under consideration, no satisfactory specification has been reached for standard commercial quality structural steel suitable for riveting or welding. The question of revising A-242, specifications for low-alloy structural steel is still under review.

1945 Acid Open Hearth Tonnage Down from 1944

Acid open hearth steel tonnage for 1945 was 1,542,724 tons of which 746,656 tons was for ingots and 796,068 tons was for castings, the Acid Open Hearth Research Association, Pittsburgh, has announced.

This total constitutes a drop in tonnage of 564,769 tons from the 1944 total production, a reduction of 27 per cent.



Backlogs of structural steel fabricators are well above the average for prewar years. During the first five months of 1946 bookings have exceeded the average for prewar years and likewise have been greater than shipments over the same period

British Steel and Heavy Product Exports Top 1938 Monthly Average

Rate of foreign shipments more than doubled in last six months. May movement led by automobiles, machinery and iron and steel. Acute manpower shortage felt by steelworks but output now tops that of the war years

By J. A. HORTON
British Correspondent, STEEL

IN MAY the lead in Britain's improved export trade figures was taken by motor vehicles, machinery, iron and steel.

Exports passed the 1938 average monthly volume for the first time since the war.

During the last six months the rate of export has more than doubled, rising from 50 per cent of the 1938 monthly volume in November and December, 1945, to 115 per cent in May. The comparable figure for April this year was 95 per cent.

The following figures represent some of the principal items in iron and steel showing exports for May, and January-May, 1946, together with comparisons for the same periods in 1945:

	May		January to May	
	1945	1946	1945	1946
Pig Iron		886	157	2,149
Spiegeleisen & Ferro-Manganese	9,551	6,336	13,561	30,395
Sheets, ⅛" & up	4,821	38,229	8,342	147,230
Galv. Sheets ..	57	4,401	351	9,329
Tinplates	792	9,137	3,754	42,517
Tubes, Cast ..	215	7,768	2,112	28,796
Wrought	2,173	31,830	15,656	116,350
Rails	5,691	34,357	17,146	148,750
Wire	317	8,686	1,040	31,931

The comparatively small export of galvanized sheets, most of which have gone to empire countries, is explained by the fact a big tonnage is reserved for the domestic market which during the war has been practically starved. Demand is still very large and makers are likely to be fully booked for a long period. Similarly in the tin plate field, the mills are substantially filled with orders for home and export but working at much less than potential capacity and therefore unable to fulfill more than a proportion of the business offering.

One feature about the figures of manpower is that there are now nearly a quarter of a million more workers engaged on export manufactures than in 1938. The present figure is 1,236,000 workers and the target for the end of the year is 1,550,000. According to the secretary for overseas trade, H. A. Marquand, workers are joining the export drive at the rate of 90,000 a month.

An increase of 1000 motor vehicles each month has taken place in exports during the quarter. In both Birmingham and Coventry, the home of Britain's motor car industry, business is expanding rapidly and demand for workers in the next few months is expected to be considerable.

The manpower problem is still very serious in all British industries, however, and there are probably four times as many jobs open as there are work-people available to fill them. Nevertheless the transfer of labor from war to peacetime channels is proceeding with much less dislocation than in the period immediately after the first world war when men were out of employment for long periods.

The iron and steel industry stands at the top of the list of those needing labor. It needs more than 5600 workers. Nut and bolt makers, steel forges and foundries all need men. Light foundries are hard pressed on account of the huge demand for builders' castings. The housing program will tax the resources of the industry for a long period and it is essential that the labor force should be augmented. Although some releases from the military services are helping the situation young men are not joining the foundry industry.

It is noteworthy that production of steel has now reached a point when it is higher than during the war years, a feat accomplished in spite of the severe limitation of fuel supplies and the still sharper shrinkage of native ironstone. In twelve months domestic output of iron ore has declined by nearly 25 per cent. During the same period pig iron has increased by 13 per cent and this has been possible only by the resumption of the imports of foreign ore which are now at the rate of half a million tons per month. Cleveland ironstone miners have assented to the introduction of Polish labor into the local mines.

Imports of semifinished steel are a vital necessity to the re-rolling trade, especially those works engaged in the production of sheets, world demand for which is on an unprecedented scale. In May, 1945 no semifinished was imported at all but in May this year Britain bought 31,989 tons; in the period January to May, 1945, the total was 45,612 but in the corresponding period of this year it had risen to 112,641 tons. Even with this substantial increase consumers are still in difficulties in regard to supplies because between the two great wars the tonnage imported from France, Luxembourg, Belgium and Germany ran into very heavy figures. British production of semifinished never has been equal to the demand of the rerolling works.

In the domestic market orders are piling up for all sorts of industrial development, much of which would have been undertaken had it not been for the war, and a substantial proportion due to wartime destruction.

Makers of railroad cars and trucks have a great deal of leeway to make up. British rolling stock is due for replacement; heavy electrical engineering firms have a great deal of work for public authorities; and the program for shipbuilding and ship repairing alone is of huge dimensions.

Steelmakers on the northeast coast are mainly concerned with shipbuilding requirements though steel tubes are supplied in large quantities from works in the Midlands. In the first four months of the year 37 vessels of a total of 113,000 tons were launched from Scottish yards including a 10,000 ton cargo liner built to the order of the Canadian Pacific Steamships. The same company has placed in the Clyde district orders for two passenger liners, each of 6,000 tons gross. They are intended for service on the British Columbia coast.

Foreign Notes . . . .

Decision of the Italian authorities to import finished steel and iron for railways and shipbuilding is reported to be seriously discouraging domestic steel production in that country, according to a report on the industry by the Allied commission.

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Merchants in China are permitted to purchase, ship and market tin and mercury under an action, effective June 11, of the Chinese authorities lifting trade restrictions imposed during the war. Under previous controls, export of tin and mercury by individuals and firms was prohibited.

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Subsidiaries of American steel companies are examining possible iron ore deposits in Venezuela to which they

have acquired exploration rights. Rights have been granted to two companies to explore deposits in the Orinoco delta and begin preliminary operations along the Orinoco river.

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Iron ore deposits in the British-owned Fiji Islands are to be thoroughly surveyed by the island's Department of Mines, a consular report from Suva has indicated. Encouraging samples have been taken from magnetite ore and ochre deposits; however, local mining men are said to doubt the success of any industrial exploitation because of lack of domestic coal for smelting.

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Reduction in the tariff on smooth iron and steel rods, semimanufactured, is reported to the Department of Commerce from American sources in Venezuela. These products have been reclassified so that they are now dutiable at .005 bolivares per gross kilogram instead of .05 bolivares as formerly.

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Materials, including tools, parts and machinery, to be used for construction of a new alcohol distillery in Ecuador, have been exempted from import duties and other charges, by government decree, according to advices reaching the Department of Commerce.

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South Africa is shipping agricultural machinery to Brazil, a report from American sources at Pretoria has disclosed. A South African manufacturer has received an order for more than 600 plows, valued at $12,000, marking the first Brazilian order for any South African-manufactured product.

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Unloading units at French ports were reduced by the war from 1975 at the beginning of the war to 377 at the time of liberation, according to information in connection with plans for restoration. By April, this year, the total had risen to 656 units, but this included Allied army installation.

Enactment of Strategic Materials Stockpiling Act Expected Shortly

HOUSE approval of the conference report on S. 752, the Strategic and Critical Materials Stock Piling Act, leaves only one more action before this important bill is ready to go to the White House—acceptance by the Senate. This is regarded as a formality since the legislation was initiated and debated in the Senate and the conference agreement did not make any radical changes in the bill as it originally passed the Senate.

The bill takes the form of an amendment to the act of June 7, 1939 (53 Stat. 811) providing for stockpiling of strategic and critical materials for national defense. It expresses the policy of the Congress that stockpiling should be employed to insure adequate reserves of certain materials in which the United States is deficient or in which its resources are insufficiently developed.

Purchases of strategic and critical materials under the program will be made by the Treasury Procurement Division, and they are to be made, as far as practicable, "from supplies of materials in excess of the current industrial demand."

An important feature is a directive to the Secretary of the Interior to authorize and direct the directors of the Bureau of Mines and the Geological Survey "to make scientific, technologic, and economic investigations concerning the extent and mode of occurrence, development, mining, preparations, treatment and utilization of ores and other mineral substances found in the United States and its territories or insular possessions, the quantities or grades of which are inadequate from known domestic sources. Also it authorizes these agencies to devise new methods for the treatment and utilization of lower grade reserves, and to develop substitutes for such essential ores and mineral products; on public lands and on privately owned lands, with the consent of the owner, to explore and demonstrate the extent and quality of deposits of such minerals, including core drilling, trenching, test-pitting, shaft sinking, drifting, cross-cutting, sampling, and metallurgical investigations and tests as may be necessary to determine the extent and quality of such deposits, the most suitable methods of mining and beneficiating them, and the cost at which the minerals or metals may be produced."

The bill provides admittance free of tariff duty, import tax or any other impost tax of strategic materials purchased from foreign sources.

The bill directs the Secretary of Agriculture to conduct a study to determine the feasibility of developing agricultural products which might serve as substitutes for strategic and critical materials.

Pig Iron Production Cut Sharply in May

PIG IRON production during May totaled 2,274,545 net tons, compared with 3,613,560 tons in April, according to the American Iron & Steel Institute. The total includes 30,265 tons of ferromanganese and spiegeleisen, compared with 45,422 tons in April. Capacity engaged in May was 39.8 per cent, compared with 65.2 per cent in April.

For five months this year pig iron output was 14,120,193 tons, at an average of 50.7 per cent of capacity. This compares with 26,424,993 tons at 94 per cent of capacity in the corresponding five months of 1945. Ferromanganese and spiegeleisen output for five months was 141,002 tons, compared with 287,790 tons in the same period last year.

Blast Furnace Capacity and Production—Net Tons — MAY - 1946

	Number of companies	Annual blast furnace capacity	Production: Pig Iron — Current month	Pig Iron — Year to date	Ferro Manganese and Spiegel — Current Month	Ferro Manganese and Spiegel — Year to-date	Total — Current month	Total — Year to date	Percent of capacity — Current month	Percent of capacity — Year to date
DISTRIBUTION BY DISTRICTS:										
Eastern	12	12,988,970	395,168	2,558,465	14,495	65,442	409,663	2,623,907	37.1	48.8
Pittsburgh-Youngstown	15	25,939,940	759,562	5,328,009	6,937	37,477	766,499	5,365,486	34.8	50.0
Cleveland-Detroit	7	6,557,500	334,841	1,629,382	-	-	334,841	1,629,382	60.1	60.0
Chicago	7	14,093,510	523,099	3,014,089	-	-	523,099	3,014,089	43.7	51.7
Southern	9	4,924,670	146,811	*1,049,230	8,833	* 38,083	155,644	* 1,087,313	37.2	53.3
Western	5	2,836,000	84,799	400,016	-	-	84,799	400,016	35.2	34.1
TOTAL	36	67,340,590	2,244,280	13,979,191	30,265	141,002	2,274,545	14,120,193	39.8	50.7

* Adjusted.

Subsidy Buying Of Steel Ended By Government

RFC assistance to nonintegrated sheetmakers discontinued with demise of OPA. Proposals to buy cancelled

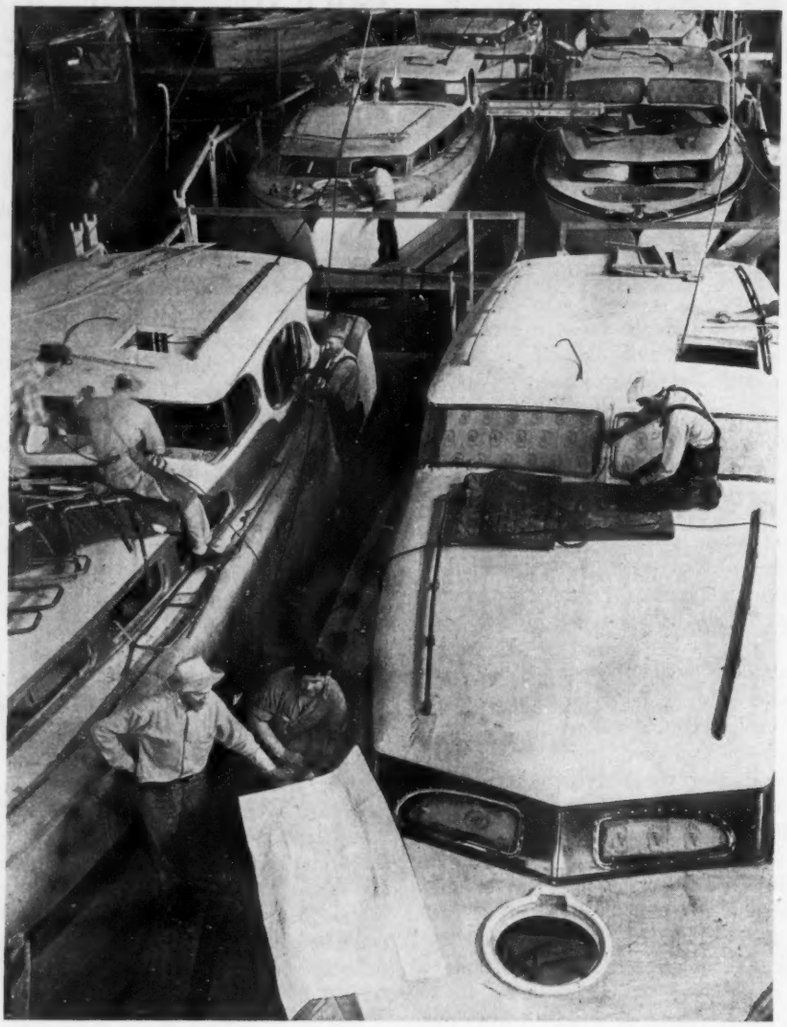
HOLDING that with termination of the Office of Price Administration it has lost its powers to aid producers by means of subsidies, the Reconstruction Finance Corp. last week notified the Jones & Laughlin Steel Corp., Pittsburgh, that it will purchase no more sheet bars for resale at a loss to nonintegrated sheet producers as it had planned.

RFC cancelled an option to buy 25,000 tons of sheet bars from Jones & Laughlin, and also it dropped a proposed deal whereby it would buy 90,000 tons from Sharon Steel Corp., Sharon, Pa., which would have been produced at Sharon's Lowellville, O., works over the third quarter had the deal gone through.

Also discarded is a plan to operate under an RFC subsidy the Defense Plant Corp. blast furnace at Gadsden, Ala. This plant was to have been operated by Republic Steel Corp.

Subsidy buying of sheet bars by RFC was first undertaken about two months ago. The initial program involved purchase of 12,500 tons from Jones & Laughlin Steel Corp. for resale to five nonintegrated sheet mills.

RFC paid Jones & Laughlin $45.84 a ton for the steel at Pittsburgh, and sold it to the nonintegrated mills for $38, delivered. Including freight charges this subsidy arrangement cost the RFC $10.34 a ton, or about $129,500.



CRUISER ASSEMBLY LINE: Forty-foot pleasure boats are readied for launching at the Los Angeles Harbor Boat Building Co. The cruisers develop a top speed of 40 miles an hour with twin engines. NEA photo

A. O. Smith Corp. Awarded Huge Steel Pipe Order

A. O. Smith Corp., Milwaukee, last week was reported to have booked what is described as one of the largest single orders for pipe ever placed. United Light & Railway Service Co., Davenport, Ia., is understood to have awarded the order subject to approval by the Federal Power Commission. The Big Inch pipe line constructed by the government during the war was 1200 miles long and was of 24-inch pipe.

The order calls for 1285 miles of pipe most of which will be 26 in. in diameter and will cost over $19 million. The pipe will be used to construct a natural gas line from Texas to Detroit. Over 200,000 tons of steel will be used to fabricate the pipe.

When completed the new line will be operated by Michigan-Wisconsin Pipe Line Co. which is a subsidiary of United Light & Power Co.

Mechanized Farm Exhibit Shows Wide Use of Steel

Major and permanent exhibit in the form of a modern, mechanized farm was formally presented by International Harvester Co., Chicago, to the Museum of Science and Industry, Chicago, July 2.

Extremely comprehensive, the exhibit demonstrates the dependence which farmers and the farm equipment industry place on iron, steel, nonferrous metals and mechanical equipment. These products in the house, barn, corn crib, silo, chicken brooder, fences, field equipment, tool shed, shop and transportation vehicles, range from gray iron and malleable castings, through the full sweep of carbon and alloy rolled steels to stainless steel.

The exhibit depicts a midwest farm, the yard and buildings of which have been build to full scale, where the visitor may see everything from modern living facilities to the latest equipment designed to take the drudgery out of farming.

New Bids Are Asked on South Chicago Steel Plant

War Assets Administration last week called for new proposals to buy or lease the government-owned South Chicago steel plant following rejection of all bids. The agency said when it appears negotiations will result in reasonable return to the government it will establish a cutoff date against further bids.

CPA Aid To Buy Steel Urged for Small Firms

Small Business Committee calls for priorities assistance under PR-28 as pledged by the agency in May

SMALL Business Committee of the House of Representatives last week called on Civilian Production Administration to fulfill its obligations to small firms needing steel by reinstituting priorities assistance procedures in priorities regulation 28 in accordance with that agency's previous pledge to the committee.

Shortly after the coal strike was settled on May 29, estimates were made that it might require six or eight weeks before a "normal" rate of steel operations (about 85 per cent) would enable the CPA to bring steel again under the regular priorities assistance procedure, according to the committee.

CPA agreed in a letter to the committee on June 14 that until PR-28 was restored the agency would give special assistance to small plants which could show that they were being discriminated against. It is obviously difficult for a small plant to prove such discrimination as proof would require some knowledge of how suppliers are taking care of other customers, both large and small, said the committee.

Under such circumstances it insists the standard provisions of PR-28 be restored. Under that regulation a small manufacturer had only to show the amount of material needed to operate his plant at a minimum economic rate.

During the week prior to settlement of the coal strike, steel operations were about 43 per cent of capacity, the committee said. During the past three weeks operations have risen sharply to 76.1, 84.2, and 87.2 per cent, respectively. Steel operations are now clearly above the goal of 85 per cent. The optimistic statements made by CPA Administrator Small on June 28 regarding the general business outlook further indicates that the original estimate of six to eight weeks is too conservative, the committee concluded.

Scrap Freight Rates from Western Points Upheld

Last week the Interstate Commerce Commission ruled that freight rates on scrap in carloads from Iowa, Kansas, Minnesota, Nebraska, Wisconsin, Illinois and Michigan to Pittsburgh and Ohio points are not unreasonable unless they exceed 70 per cent of the rates on finished iron and steel prescribed in Western Trunk Line schedules for the same haul.

Deciding against the American Steel Abrasives Co. and affiliated complainants at Pittsburgh, Galion, O., and Mansfield, O., the commission held that in any case where the complaining companies paid in excess of the 70 per cent basis they were entitled to reparations.

New OPA Orders Issued Effective Prior to July 1

Office of Price Administration issued several orders during the last week of June which affected the metalproducing and metalworking industries. By-product coke producers were given a $1.35 per ton increase in prices, effective as of June 28.

A price of $90 per short ton, fob seller's mill, was established for refuse palm oil sold by steel mills to manufacturers of fatty acids and soaps, effective as of June 29. This price applied only to refuse palm oil having a saponification value of 175, and a moisture content of 2 per cent. Adjustments were provided for oil which may be of better or worse quality.

A wage-price increase of 8.5 per cent was authorized, effective June 27, for manufacturers of household vacuum cleaners. This rise brought the total reconversion increase granted to the industry to 15 per cent over 1941 prices.

Repair and replacement parts for household electric ranges were given the same 11 per cent price increase over October, 1941, prices that has been applied to the stoves themselves. This increase was effective June 28. In the same action, the following adjustments were made in prices on parts for domestic stoves, other than electric, 13 per cent; for household washing and ironing machines, 17 per cent; and vacuum cleaners and attachments, 15 per cent.

Manufacturers of dry batteries were authorized to increase base prices 8 per cent, effective June 28. OPA also announced that the maximum price for unfired rifle shells which are sold as scrap remains the same as the ceiling price for yellow brass scrap under the previously published brass mill scrap price schedule.

Lead Set-Aside Ordered by CPA as Stocks Dwindle

Effective Aug. 1, the Civilian Production Administration has ordered a 25 per cent set-aside of all primary lead production because of dwindling stocks. In the revision of the lead conservation order, in addition to this set-aside, quotas are reduced for lead storage batteries in third quarter to 19 per cent of the 1944 base period for automotive batteries, compared with 22 per cent for the second quarter.

Lead quota for industrial batteries was held unchanged from the previous 25 per cent of the calendar year 1944 use.

GOVERNMENT CONTROL DIGEST

CIVILIAN PRODUCTION ADMINISTRATION

Certified Steel Orders: "Certification" plan under which manufacturers of critical housing and farm machinery products are allowed to obtain priority on orders placed with steel mills now specifies that manufacturers placing new orders on steel mills under this plan must signify CPA approval by reporting to the steel mill the CPA serial number granting such approval. The order was amended also to provide that a Canadian manufacturer must certify to the steel mill on which an order is placed and also to the Canadian priorities officer and to the CPA that the steel obtained on certified orders will be used only to make the products mentioned above. (M-21; CPA-LD-124)

Tractors: No producer of farm-type wheel or track-laying tractors is permitted to produce or ship for export, to any foreign country except Canada, any such tractors in excess of the quantities authorized for such purpose by the CPA. CPA will issue individual directives to producers establishing export quotas and scheduling the shipment of certain tractors needed for the United Nations Relief & Rehabilitation Administration. Each producer will set aside 7½ per cent of each month's production, beginning with the month following receipt of his contract from the Treasury Procurement Division, until his quota is met. (L-356; CPA-452)

Surplus Property: Anyone requiring either material or equipment to sustain or increase production of critical products as listed in schedule 1 of priorities regulation 28 may be granted urgency certificates which give the holder precedence over any other class of buyers of WAA stocks of surplus. Urgency certificates may also be issued to war contractors if the War or Navy Department or the Maritime Commission certifies that the contractor's inability to obtain the desired material or equipment from other sources will have a serious effect on the defense program or the health and welfare of the enlisted personnel. Urgency certificates for steel in the shapes listed in schedule 1 of order M-21 may be issued only to producers of the products listed in schedule A of direction 12 of the order. (PR-13; CPA-455)

WAR ASSETS ADMINISTRATION

Production Materials, Equipment: Sales of production materials and production equipment by WAA to both users and distributors now will be governed, in general, by fixed prices established as close to the current market price as practicable and set so as to conform with existing trade practices for the particular type of property. Precedence will be given to small purchasers and distributors who serve small independent buyers. Contractors in possession of production equipment listed as being in short supply are permitted to acquire only 25 per cent of such items in their plants, and then only upon a release and waiver of all purchase rights contained in any contract with the government. If such contractor is engaged in a small business, he may acquire the equipment in short supply without being limited to 25 per cent, provided his contract with the government did not cover equipment valued in excess of $300,000. (WAA-21; WAA-335)

Five-Year Federal Tax Plan Under Consideration by Joint Committee

Program would enable taxpayers to plan ahead more effectively than under present system of revising levies each year. Congressional action improbable before 1948, or until war spending ceases to be major factor in revenue legislation

ADOPTION of a five-year federal tax plan to replace the present system of revising taxes annually is under serious consideration by the House-Senate Joint Committee on Internal Revenue Taxation.

The purpose, according to Sen. Walter F. George (Dem., Ga.), chairman, is to enable taxpayers to know definitely a long time ahead what their tax liabilities will be. By being able to figure their tax commitments well in advance, businessmen will be in a better position to determine how they can use their funds to best advantage. Similarly, individual income taxpayers can arrange to buy homes and make other expenditures without risk of having their plans disorganized by sudden changes in the tax system.

Congressional action on the five-year plan cannot come before 1948, said Senator George, because that will be the first year in which government war spending will not be a major factor in drawing up tax legislation. Adoption of the plan is by no means certain, since there has been an overwhelming objection in Congress in the past to writing tax legislation which would commit future members of Congress. Too, feasibility of the five-year arrangement has not yet been demonstrated conclusively; to make such a system work, said Senator George, federal expenditures would have to be worked out pretty accurately for the whole five-year tax period. There would have to be advance scheduling of government expenditures, and close team-work between committees responsible for spending and taxing.

Two proposals in this direction already have been made in Congress. One is a Senate-approved bill introduced by Sen. Robert M. LaFollette (Prog., Wis.) providing for adoption of annual federal budget totals by joint action of the House Ways and Means and House Appropriations Committees and the Senate Finance and Appropriations Committees. This bill provides special checks on the authorization of government expenditures in excess of revenues.

A bill recently introduced by Rep. Harold Knutson (Rep., Minn.) provides reduced tax rates would become applicable only if government expenses were reduced.

The joint committee's staff of experts, headed by Colin F. Stam, at present appears to be concerned chiefly with seeking an answer to as to how a substantial amount of inflation would affect plans to fix a tax levy over a five-year period. This phase of the study is held up particularly to determine whether organized labor this fall and early next year will seek another round of pay increases which would complicate the tax problem by paving the way for further cost increases.

"The whole question revolves around a stable economy, advance planning of federal expenditures, and a definite feeling that no foreign or domestic crises will upset the nation's economy," said Mr. Stam.

1947 Tax Law Being Considered

In the meantime the joint committee's staff is working on a stop-gap tax law to be initiated in the usual way by the House Ways and Means Committee early next year. As seen at the present time, decisions to be made in writing the 1947 tax bill are:

1—Whether excise taxes on liquor, jewelry, tobacco and other goods shall be continued at the present level or reduced or eliminated.

2—Whether the direct sales tax which has been so extensively adopted by states and cities should be adopted also by the federal government.

3—Whether the principle of withholding taxes can be applied to groups of taxpayers whose taxes now are not being withheld.

4—Whether taxes on 1947 income should be reduced (a question involving a decision on the issue of levying high taxes in periods of prosperity in order to prepare for high government expenditures in periods of depression).

5—Whether any change should be made in the present method of distributing the tax burden, and particularly whether low-income groups should be eliminated from the necessity of paying income taxes.

Exports To Be Resumed

Tentative agreement has been reached following a number of conferences between the Civilian Production Administration and the Office of International Trade, Department of Commerce, that a supply assistance program of steel exports can be resumed as of Aug. 1. The plan is to provide supply assistance in the most urgent cases and the program will include shipments to European and Latin American countries. In the meantime the only supply assistance program now in existence is that involving 112,000 tons of tin plate for export shipment during the third quarter.

Hauseman Leaves Army

Brig. Gen. D. N. Hauseman is on terminal leave and will retire from the Army. As head of the Army Readjustment Division, General Hauseman had charge of terminating war contracts and disposing of surplus property. Under his direction 126,022 of the 132,726 War Department terminated contracts have been entirely settled, and property which originally cost nearly $16.5 billion was released to disposal agencies or disposed of by other methods through March, 1946. Brig. Gen. Maurice Hirsch has taken over the contract termination assignment from General Hauseman, while Brig. Gen. Theodore M. Osborne has charge of surplus property disposals for the War Department.

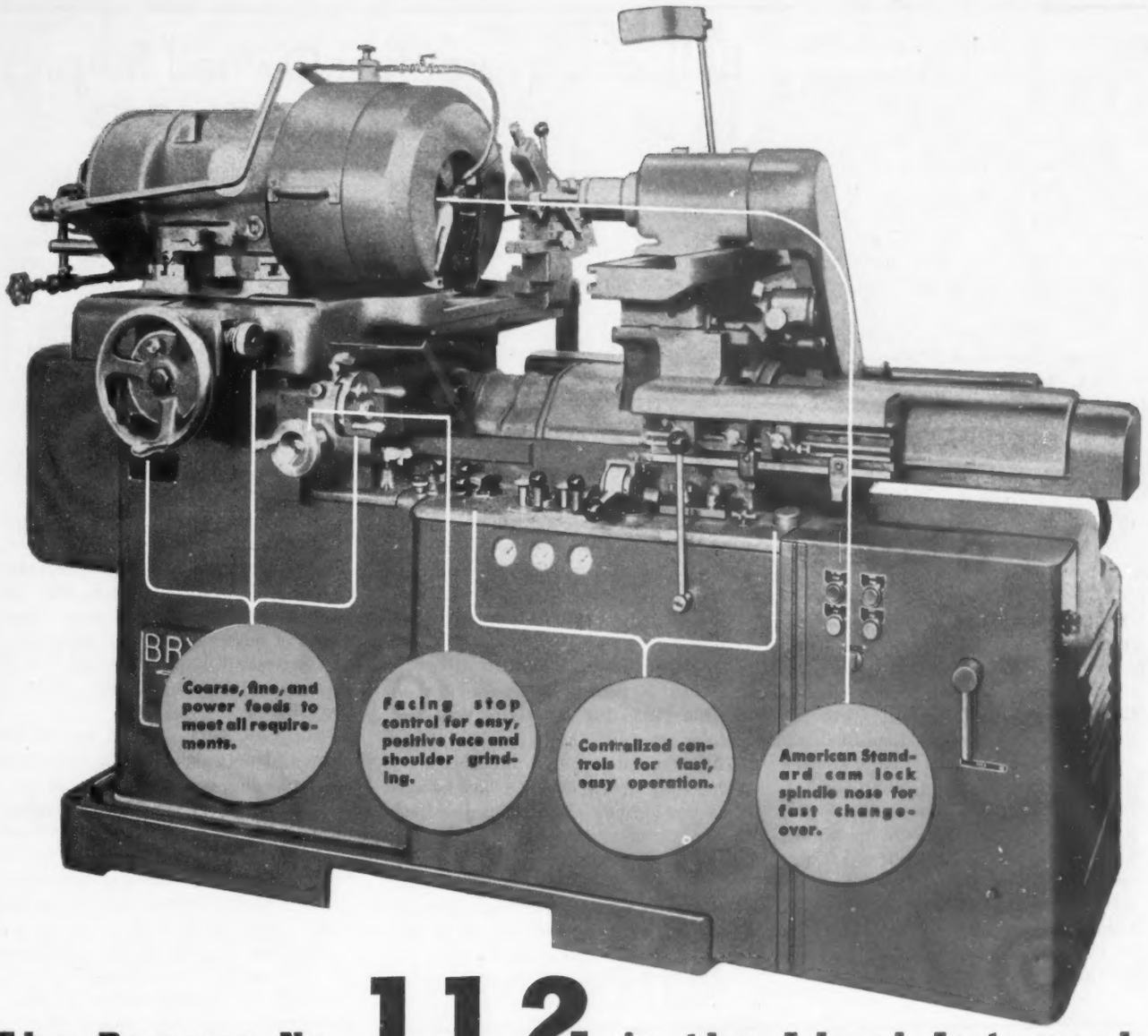
Set Mortgage Ceilings

To force down the cost of building new homes, and to keep sales prices down, the Federal Housing Administration has set mortgage ceilings which have been forwarded to all its field offices. They range from $6000 to $8100 on three-bedroom houses including garage, the ceiling depending on costs in the different regional areas.

Ceilings proportionately lower for two-bedroom houses will be worked out immediately by each FHA regional office and reported for approval; sample cases so far studied indicate a spread of $600 to $1000 below the three-bedroom mortgage ceilings.

FHA also is preparing to act as soon as possible in setting sales ceilings and rental rates.

"We are convinced construction costs must come down during a transition period," declared Raymond M. Foley, FHA commissioner, in announcing the ceiling policy. "The policy adopted is to assist builders in accelerating the transition without stopping construction. Many of the high-cost factors no doubt are caused by temporary conditions, resulting in expensive delay and loss of efficiency. Other parts of the high cost are undoubtedly not actually necessary but result from competition for materials


Coarse, fine, and power feeds to meet all requirements.
Facing stop control for easy, positive face and shoulder grinding.
Centralized controls for fast, easy operation.
American Standard cam lock spindle nose for fast change-over.

The BRYANT No. 112 is the Ideal Internal GRINDER for Small Lot Production

From stem to stern, the Bryant No. 112 Internal Grinder is designed for small lot production. It is truly the *ideal* tool room machine, because every lever, every control, every part was planned to speed the production of short runs or single parts.

There are three feed controls—one for coarse feed for setup, another for power feed for production, and a third for fine feed for precision.

An American Standard cam lock spindle nose allows fastest change of chucks and holding fixtures.

All controls are centrally located so that all of the operator's motions are easy and natural—more work produced with less fatigue.

A universal facing stop (standard equipment) makes face and shoulder grinding an easy, positive operation.

These are only highlights—for complete details on this "ideal" tool room internal grinder, just . . .

Send for the Man from Bryant.

Write for new catalog on the No. 112

BRYANT

BRYANT CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.

and services and from other conditions current in the building field.

"The FHA has now obtained authority for a much closer analysis of prices in the HH priorities system through which permissions to build houses are granted. We now can require complete plans and specifications and are preparing also to make site appraisals. We will make compliance inspections even though the houses are not financed with FHA-insured mortgages. We have in mind a close cost and profit estimation, and our offices have been instructed not to allow any margin for contingencies."

Cost of Living Rises

Another rise of one-half of 1 per cent in living costs was disclosed by the May 15 tabulation of the Bureau of Labor Statistics' "Consumers Price Index for Moderate-Income Families in Large Cities." The May 15 index stands at 131.5, compared with a 1935-1939 average of 100. This figure was announced, however, without taking in consideration recent increases in OPA prices on dairy, bakery and cereal products. These increases will show up in the June 15 index.

The bureau reported that consumer prices have risen 1.7 per cent since V-J Day. Clothing prices have increased 6.1 per cent in that period, house furnishings 4.4 per cent, and food prices 1.2 per cent. Meats, butter, oleomargarine, shortening, bread and some canned goods were reported so scarce that it was impossible to obtain the usual number of price quotations.

Bulk of Government-Owned Surplus To Be Liquidated by Early 1947

"Site sales" and other speed-up measures designed to move $33 billion of goods more quickly. Policy to enable small business to take advantage of priorities overhauled. Combat planes will be sold for scrapping and reclaiming of metal

WITH aid of the "site sales" program, under which surplus goods are to be put on sale at 938 warehouses, manufacturing plants, military installations and other points throughout the country during July, August, September and October, the great bulk of surplus government-owned war property, other than plants and real estate, should be liquidated by the early months of 1947. At least, this is the expectation of War Assets Administration officials as revealed at a recent hearing of the Surplus Property Subcommittee, Senate Committee on Small Business.

"Time is running dangerously short for the disposal of billions of dollars of surplus property," Lt. Gen. E. B. Gregory, WAA administrator, told the subcommittee. "The disposal of $33 billion of surplus is a gigantic undertaking. In March the value of surplus property disposed of was $527 million; at this rate it would take five years to complete the program. But we will do better. In May the value exceeded $824 million. By September we should double this rate."

Remedial steps are being taken to eliminate causes of delays. In particular, notable headway has been made in labeling each machine tool or other production machine with a tag bearing necessary information for pricing and other sales purposes. Now under development is an overhauling of sales policies to help small business get adequate assistance.

At the same time, it was revealed, the WAA will continue to be faced with some discouraging factors. For instance, the priority treatment which must be given to the veterans and certain other classes of buyers under the Surplus Property Act may have the effect of discouraging nonpriority buyers from attending site sales.

Brig. Gen. G. E. Textor, one of the WAA's deputy administrators, told of an overhauling of policy to enable small business to enjoy the priority position given to it under a recent amendment to the Surplus Property Act. To get this priority, small business firms must do their buying through the Reconstruction Finance Corp.

"To assist small businesses purchasing through the RFC," said General Textor, "the WAA has instituted or has under development these new procedures:

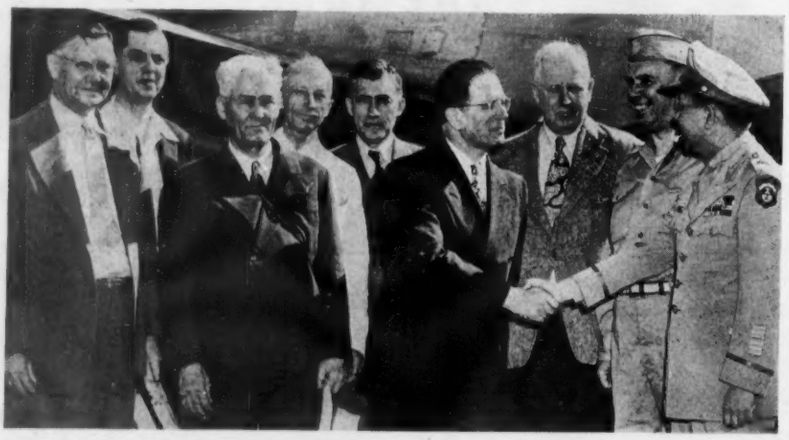
"1—Whereas sales to the RFC for small business previously have been allotted a period of five days or less, this period now has been stretched out to 10 days.

"2—To facilitate purchases by small business at site sales, the RFC will assign a bonded representative to each such site sale, and he will have complete authority to accept payment and conclude transactions without any red tape.

"3—Under a new order now being formulated under WAA Regulation No. 2, the RFC will be called on for assistance, whenever normal procedures prove inadequate, in direct sales by the WAA to small business."

Also to be announced shortly, said General Textor, is a new WAA regulation under which small business will receive preference in purchasing production equipment, particularly on machine tools and other equipment in short supply.

Surplus combat planes, said Brig. Gen. James A. Mollison, another of the WAA deputy administrators, have proven to have value only for their basic metal content, and he cited the current offer-



ATTEND PHILIPPINE CELEBRATION: American congressmen attend the Independence Day celebration of the Philippines July 4. Left to right: Rep. J. W. Robinson, Utah; Vernon Moore, secretary, Philippine Rehabilitation Commission; Sen. Hugh Butler, Nebraska; Rep. Fred Crawford, Michigan; Weldon Jones, representing President Truman; Sen. Allen Ellender, Louisiana; Rep. George P. Miller, California; Sen. Owen Brewster, Maine; and Brig. Gen. Carlos Romulo, Philippine Resident Commissioner. NEA photo

ing, for scrapping purposes, of 20,000 combat planes at the five large WAA storage depots. Some hope existed that instruments and accessories stripped from combat planes might find markets but the large stocks of such instruments and accessories in warehouses proved a stumbling block. The sale of combat planes for scrapping will be pushed through as rapidly as feasible to save storage space and expense and to get the metal used for manufacture of civilian products.

On the other hand, sales of surplus transport and other planes suitable for hauling passengers and freight, and for delivering mail, counting wild life, dropping food during heavy snows, patrolling fences, prospecting for ore outcrops, hunting coyotes, and many other purposes, said General Mollison, have had a most beneficial effect on the economy. Today there are 4630 companies conducting commercial flying businesses, mostly organized by veterans, and few of them dating back to before the war. They are doing a big business in selling their services and, in addition, are helping many other businesses. Repair and maintenance of aircraft purchased by these companies from surplus stocks has been a big source of revenue to small shops all over the country.

Inventories Being Brought Up to Date

Now well on the road to elimination is a major obstacle which up to now has hampered sale of government-owned machine tools, said Frank R. Creedon, another WAA deputy administrator.

At the time of contract termination, he said, machine tools and other production equipment had to be moved rapidly to clear contractors' plants for reconversion. Many of the tools were shipped to RFC warehouses without being declared surplus. As a result, paper work fell far behind, and up to now it has been impossible in many cases to tell which tools in a warehouse were available for sale. Too, there has been no easy method of ascertaining the price on many tools.

"Thus we have a situation where quantities of tools are side by side and end to end in our warehouses, some declared as surplus and some not declared. In Cleveland, for example, we know we have tools in one warehouse which represent an acquisition value of $38,000,000, yet the inventory shows only $5,627,008.

"We have started a program of preparing a document for each machine, to be physically attached to each machine, to serve as a combined declaration of surplus, an inspection certificate, pricing instrument and sales document. This device will cut out a lot of delay. This work takes time but we are making headway. Our Detroit regional office to date, by this method, has prepared some 9000 production tools for sale."

Maj. Gen. C. F. Robinson, another of the WAA deputy administrators, warned the subcommittee that it is going to be most difficult to carry out the disposal program in complete compliance with the priority handicaps set up by Congress. But the WAA is not going to delay the liquidation program on that account.

STUDY ATOMIC CONTROL: Russia's Arkedy Sobolov, left, and Dr. H. V. Evatt of Australia discuss possible means of compromise between Russian and United States' plans for control of atomic energy at a meeting of the United Nations Atomic Energy Committee in New York. NEA photo

Seek Surplus Disposal Aid

War Assets Administration officials continue to seek solutions to a number of problems having to do with disposal of surplus machine tools and other production equipment. One of the most important matters now under study is the setting up of effective organizations to conduct disposal of property under the "site sales" program (STEEL, July 1, p. 80). Present thinking is that best results will be obtained by having these sales conducted by companies experienced in this type of business. A plan now being worked on calls for hiring the services of machine tool dealers and other merchandizing organizations to conduct these sales on a retainer or per diem basis.

Such arrangements, WAA legal authorities say, would be permissible under the Surplus Property Act.

The question as to how the WAA may legally pay commissions on sales of machine tools made by WAA-approved dealers still is under discussion by WAA officials with the comptroller general of the United States (STEEL, June 24, p. 176). Under the comptroller general's ruling, WAA can pay commissions on sales made by approved dealers who entered upon this status prior to March 25 at the time RFC's War Assets Corp. still had charge of surplus property disposal. WAA officials have been thinking of asking Congress to pass special legislation to authorize WAA to pay commissions to approved dealers who became WAA agents after March 25.

Indifference of machinery rebuilding companies is said by WAA legal advisers to be the principal cause of a continued delay in establishing a price policy covering sales of government-owned machine tools and other production equipment to rebuilders. When it became apparent that prices set under the Clayton formula would not be fair to rebuilders, a questionnaire was sent to such companies asking them for their opinions as to the fairest pricing policy to apply to them. So far these questionnaires have not attracted much response.

Five Cruisers To Be Scrapped

Five light cruisers, according to an announcement by the Navy, are to be scrapped at the Philadelphia Navy Yard. They are *DETROIT, RICHMOND, TRENTON, CONCORD* and *MEMPHIS*. All are 20 years old or more.

School of Political Action Offers Students Comprehensive Curriculum

Faculty roster studded with names of CIO spokesmen and others identified as friends of organized labor. Secretary Wallace addresses opening session. Similar colleges may be instituted in other major cities

IF SOME 500 "students" who took the courses at the four-day "School of Political Action Techniques" held in the Willard Hotel, Washington, June 26-30 inclusive, do what they are supposed to, the voters of the country are due to witness some high-powered and novel procedures in connection with the election campaign which will come to a climax in November.

The curriculum was the most comprehensive imaginable and the subjects of some of the 40 lecture and study periods scheduled on a basis of 16 hours a day were as follows:

"Major Issues in 1946 Elections," "Organizing a Citizens Committee," "Analyzing a Congressional District," "Planning a Public Relations Program," "Publicity Releases," "Building Ward and Precinct Organizations," "Analyzing Candidates' Records," "Radio-Rights to Air and Use of Time," "Using Public Opinion Polls," "Financing a Political Campaign," "Planning Campaign Literature," "Parliamentary Procedure in Congress," "Registration and Get-Out-the-Vote Campaigns," "Religious and Racial Factors," "Political Speech Writing," "Organization and Preparation of Canvassers," "Organizing Clergy for Political Action," "Use of Sound Truck and Specialized Media," "Arranging and Programming Mass Meetings," "Organizing Rural Areas for Political Action," "Operation of a Speakers Bureau," "Organizing Women for Political Action," "Organizing Community Political Action Schools," "Organizing Youth for Political Action," etc. Sponsored and organized by the National Citizens Political Action Committee, the school is supposed to be just a school for citizens—it is not supposed to be backed by any particular pressure group. While the program listed Sidney Hillman, of the CIO-PAC as "honorary chairman," spokesmen for the school said Mr. Hillman had no direct connection with it.

At the same time, the list of speakers was studded with the names of CIO spokesmen, and with those of many who have identified themselves as friendly to the CIO.

On the list of officers of the sponsoring National Citizens Political Action Committee appeared these names: Chairman, Frank Kingdon; chairman, executive council, Elmer A. Benson; executive vice chairman, C. B. Baldwin. Some of the representative names of "vice chairmen" included Bruce Bliven, Evans Carlson, Mrs. Marshall Field, Mrs. J. Borden Harriman, Freda Kirchwey, Max Lerner, Dorothy Parker, James G. Patton, Gifford Pinchot, Morris Rosenthal, R. J. Thomas, Orson Welles, Bishop R. R. Wright Jr., A. F. Whitney, Mrs. Edward M. M. Warburg.

Typical of the instructors were those in charge of the most popular course, "Techniques of Dealing with Congress." These included Harold Buckles, secretary to Rep. Adolph Sabath (Dem. Ill.), Katherine Shryver, secretary of the Committee to Abolish the Poll Tax, Irving Richter, Washington representative of the UAW-CIO, and Carl Holderman, CIO-PAC director for New Jersey.

One of the principal instructors in the 12 sessions on the art of creating and maintaining public relations was Len DeCaux, public relations chief for the CIO. Others who handled the teaching assignments in the public relations meetings included Sam O'Neal, publicity director of the Democratic National Committee, Robert Heller, Columbia Broadcasting System producer, and Daniel Melcher of the National Committee for Atomic Information.

While the overwhelming percentage of the students were affiliated with CIO and other labor organizations, there were many housewives, veterans, social workers, churchmen, secretaries of congressmen and college students. But there were representatives of organizations representing business and other groups interested in learning more about what makes the political wheels go round. Included in the attendance were three representatives of the National Association of Manufacturers and a number of Army and Navy officers.

Hearty applause was drawn by Leo Krzycki, president of the American Slav Congress, when, at a session on "Religious and Racial Factors in Politics," he defended the foreign policy of Soviet Russia. Complaints of the "iron curtain" of Soviet censorship in most Slav countries, he declared, are made by war mongers who are trying to precipitate a third world war. He condemned the House ban on food relief to countries under censorship, and called this a move to force our views about freedom of the press on other peoples. His speech was one of a few touching on the political import of ideologies in international relations, but it served the purpose of showing that a majority of the students appeared to endorse Russian foreign policy.

The students came from every part of the United States. C. B. Baldwin, the school director, said he envisioned the school as a teachers college "which will enable the students to return to their own

Secretary of Commerce Henry Wallace addresses the opening session of the School of Political Action Techniques held in Washington under the auspices of National Citizens' Political Action Committee. NEA photo

communities and, in furthering their 1946 campaign work, organize community schools of political action techniques."

In addition to getting the school idea actually started in Washington, Director Baldwin plans to duplicate the Washington school at several other cities which will figure importantly in deciding election results this year. Other cities under consideration include Detroit, Buffalo, Cleveland, Los Angeles, Seattle, Philadelphia and Youngstown.

A high spot at the opening session was a surprise speech by Secretary of Commerce Henry A. Wallace who said the nation is facing two wars—the war against scarcity and the war for peace. He drew hearty applause when he said the Democratic party "needs a rebirth," and the Republican party rests in certain large forces which "never have believed and never will believe in progressiveness." Speaking later at a public relations session Secretary Wallace told the students that "we may be facing control of the press and radio," but declared that would not happen "under a Democratic administration."

One of the highspots was a classification of present members of Congress into two groups—"bad eggs" and "good guys." This feature was handled by Evelyn S. Brand, congressional research director for the Friends of Democracy. In the bad eggs group Mrs. Brand placed 49 congressmen.

Mrs. Brand was pessimistic about the ratio of bad eggs to good guys in the next Congress.

"From our point of view," she told the class in "Analyzing Candidates' Records," "the next Congress probably will be the worst in a generation. In the primaries already held the score is against us. Many bad congressmen will be re-elected and a lot of good ones will have a terrible time in the fall elections."

On the whole, students who attended the school received practical information as to how to get political results at election time.

Export Licenses Extended

Outstanding "Limited Production Licenses" covering the exportation of new passenger cars, highway and off-highway type trucks, bus chassis, or truck tractors produced during 1945 and the first half of 1946 for export have been extended by the Office of International Trade, Commerce Department, to cover the same types of vehicles produced for export in the third quarter of 1946. Exportations against the licenses may be made through Oct. 31.

If estimated production for export through the third quarter is exceeded, the OIT will notify producers of the additional number of units that may be exported.

Manufacturers who have produced for export under Limitation Order L-352 and who have not obtained a Limited Production License covering such production may apply for this license at this time if they so desire.

In making application for a license, manufacturers must answer all questions on the application form; applications which omit essential information will be returned without action.

Heads Army Research

Maj. Gen. Henry S. Aurand has been appointed the first director of the Division of Research and Development, recently organized as a component of the War Department General Staff. Col. Gervais W. Trichel, who has been acting head of the division will remain as deputy director under General Aurand. The latter, in his new office, now has charge of all War Department scientific research and development work, including a large amount of such work which is being done under contract at various college and university and other laboratories all over the country.

Alien Patents Available

Complete files of patents seized from German and Japanese nationals are now available in the patent departments of the Chicago and Boston Public Libraries and at the Alien Property Custodian's San Francisco office.

Abstracts of the patents seized by the APC are still available and may now be obtained from the Office of Alien Property Custodian, National Press Building, Washington 25, D. C., instead of from APC's Chicago office. The abstracts, covering 8000 chemical patents, are available for $25 and abstracts of 37,000 mechanical and electrical patents are available at the same price. The chemical abstracts have been prepared in 34 volumes available at a dollar each while abstracts of mechanical and electrical patents are available in each of over 300 Patent Office classifications at prices ranging from 10 cents to one dollar.

Recommendation Submitted For Welded Chain Practice

Chain Institute Inc. has proposed a revision of Simplified Practice Recommendation R100-29, Welded Chain, the National Bureau of Standards has announced.

During the war the manufacture and sale of chain was curtailed by War Production Board order. The proposed revision is for the purpose of re-establishing the recommendation as a voluntary standard of practice. It would establish list of stock sizes and types of welded chain. The proposal is for welded chain only but does not cover pocket wheel chain, stud link anchor chain, welded brass chain, or special assemblies such as sling chains, railroad, mine and broom or rafting chains.

Copies of the proposed revision may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington 25, D. C.

Mineral & Metals Division Reorganized, Changes Name

In connection with the continual reorganization of the Department of Commerce, the Metals & Minerals Division of the Bureau of Foreign & Domestic Commerce has changed its name to the machinery and metals section of the Industry Division, Department of Commerce, with W. H. Meyer as chief. He was formerly head of the Machinery Division of the department.

Donald Stough is now steel analyst, and W. E. Janssen, who was head of the Iron & Steel Division, is now consultant.

Registration Required for Foreign Companies in China

Foreign companies with plants, business houses, or branches in China had to register with the Chinese government before the end of last month under terms of the revised Chinese Company Law which was promulgated last Apr. 12, the Office of International Trade, U. S. Department of Commerce, reported.

American and other foreign companies who intend to commence business operations within China after June 30, 1946, are required to register, under the same law, at the time of beginning operations.

Myron Wiener, chief, China Legal Section, OIT, said that it is not yet entirely clear whether, in every case, American and other foreign export and import companies which trade with China but which do not transact business "within" China, or which do not have branches there, must register.

The law provides that at least half the shareholders of companies incorporated in China must live in that country.

American capital invested in China was valued at about $150 million before the war.

Here Is Our Proposal:

MAKE A TON OF SHEET STEEL GO FARTHER—PRODUCE MORE GOODS

The Trend of American Industry Suggests the Method

This is not a radical idea. It is in keeping with an established trend in industry to adapt better metals to the job, and make them "pay their own way" through more efficient design and production. Sometimes the goal has been to improve product performance, eliminate excess weight, or simplify fabricating operations. Today, the primary goal of practically all metal-working industries is to *get more production—make a ton of steel produce more goods.*

High-Tensile Steels Provide the Way

High-tensile, low-alloy steels have the properties needed to attain this objective. By taking advantage of their higher yield and tensile strengths and great corrosion-resistance, designers can reduce sections as much as 25% in a wide range of applications now built of carbon sheet steel—and still retain the same strength and durability. Metallurgy takes the place of mass to boost production per ton of steel.

Our Estimate: One Extra Product for Every Three You Build

We have worked closely with manufacturers on the application of N-A-X HIGH-TENSILE steel for varied parts and products. We know what can be accomplished with this fine-grained, low-alloy steel. It is our estimate that production of units per ton can be increased as much as 33% by replacing heavier sections of carbon sheet steel with lighter sections of N-A-X HIGH-TENSILE. And because of the good formability of N-A-X HIGH-TENSILE, exceptional in such a high-strength steel, the change-over can be accomplished without serious problems in fabricating.

Our Challenge: Look at Over-All Costs

We also believe that the higher cost of N-A-X HIGH-TENSILE, compared to carbon sheets can be compensated by production economies, over and above the savings in steel effected by its high strength. Greater corrosion-resistance, freedom from age-hardening and embrittlement, and increased resistance to "set" when bent may reduce handling costs. Exceptional formability and other desirable characteristics of N-A-X HIGH-TENSILE make possible the elimination of intermediate annealing between draws in many cases. Also, finer grain structure and higher hardness produce a smoother surface texture when drawn or stretched, resulting in a saving of metal finishing or in a higher degree of finish when painted or plated. These and other manufacturing advantages of N-A-X HIGH-TENSILE can be utilized to make N-A-X HIGH-TENSILE "pay its own way" on the basis of *over-all costs.*

We would like to work with you on your problems. We believe N-A-X HIGH-TENSILE will produce one extra product for every three you build.

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
HIGH-TENSILE STEEL

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By A. H. ALLEN *Detroit Editor, STEEL*

mirrors of MOTORDOM

Holiday interruptions prevent attainment of new high postwar automobile production plane. Over million cars and trucks built in first half of year. Monthly output of past nine months below that following World War I

DETROIT

ALTHOUGH last week was heralded as the start of a new high plane of automobile production, the holiday interruption prevented attainment of any new highs in output, so this week should see a real boost effected. The first half of the year saw something over a million cars and trucks built, 1,054,142 according to *Ward's Automotive Reports,* which estimates the ensuing six months will see 2,600,000 units completed, making a total for the year of well over 3½ million.

On the basis of recently issued figures of the Automotive Division of the Civilian Production Administration, this total will require 6,394,500 tons of steel. This is calculated by a survey of bills of materials furnished by manufacturers on 1941 production. Prefacing its report by the nostalgic announcement that "many of the WPB personnel who were familiar with the bills of materials including their limitations, have left the government service and it is not possible, therefore, to appraise the accuracy or reliability of the data," the CPA estimates that over 3850 pounds of iron and steel were required for the average 1942 model passenger car. A breakdown shows 2863 pounds of carbon and 302 pounds of alloy steel, 614 pounds of gray iron and 76 pounds of malleable.

Truck Requirements Vary

Truck requirements are, of course, considerably higher, ranging from 3223 pounds of steel for light models, to 10,318 pounds for heaviest. Castings run from 648 pounds for the light models to 2570 for the heaviest. The requirements for all vehicles are stated in gross weights, that is, they include the estimated weight of the iron and steel lost in all stages of manufacturing operations from initial fabrication processes through the final assembly. Accessories sold with vehicles at the manufacturer's plant are included in the tonnage estimates. Each manufacturer submitted requirements for each model produced and these were weighted by October, 1941, production of respective makes to obtain the averages just mentioned.

A reasonable estimate of scrap losses in fabrication might be 12-15 per cent, indicating there will be a total of some 800,000 tons of scrap iron and steel originating in the automotive industry this year. This is not too comforting a tonnage, in view of the depleted state of iron and steel scrap resources.

Automobile Production

Tabulated by Ward's Automotive Reports

Passenger Cars and Trucks—U. S. and Canada

	1946	1941
January	121,861	524,073
February	83,841	509,332
March	140,777	533,878
April	248,318	489,856
May	247,620	545,321
June	220,000°	546,278
Week ended:		
June 15	50,206°	134,682
June 22	54,475°	133,565
June 29	64,795°	127,926
July 6	40,000°	96,457

°Preliminary

Looking back over automobile production for the past nine months, the Automobile Manufacturers' Association points out that it has failed to reach 50 per cent of the monthly output in 1941, and even falls below production after the first World War when manufacturing capacity was far less than now. In the nine months following the armistice in November, 1918, the industry produced nearly 500,000 more passenger cars than have been turned out in a similar period since V-J Day last August.

From September, 1945, to June 1, 1946, the industry was able to deliver to dealers only 581,961, passenger cars, compared with 1,073,210 units from Dec. 1, 1918, to Sept. 1, 1919, despite the fact that the interval between wars brought refinements in manufacturing techniques, introduction of improved tooling methods and other developments to boost volume production.

While motor plants of World War I were not as completely converted to armament output as during the war just concluded, actually a faster job of getting plants in shape to resume civilian production was achieved after the second war, pricipally because of foresighted plant clearance and contract termination procedures. However, strikes and materials shortages prevented the realization of the opportunities presented by such agility.

In 1916, the year preceding World War I, the industry had reached a new high in automobile production, turning out a total of 1,525,579 units. In 1941, a year of curtailed output, the industry produced 3,744,300 passenger cars. In May, 1946, nine months after V-J Day and the latest month for which complete production figures are available, auto plants turned out only 152,948 units, or 51 per cent below the monthly average for 1941. By comparison, the industry in August, 1919 — nine months after Armistice Day — produced 140,479 units or 10 per cent above monthly average prevailing in 1916. Production in the three years preceding the first war totaled 2,965,187 units, as compared with 10,303,424 units in the 1939-41 period.

Working Conditions Improved

A considerable portion of the $10 million Ford foundry reconversion program, already well underway at the Rouge plant, will be spent to provide improved working conditions for the company's 10,000 production foundry employees. The Ford production foundry is the largest in the world. At peak production its furnaces melt 4,000,000 pounds of gray iron and steel, producing 5400 engine blocks and other castings, daily.

Removal of thousands of square feet of balconies has admitted more sunlight and improved ventilation. Several electric furnaces have been moved to outside production in the building where objectionable heat and smoke no longer will pose a problem. Heat-treating furnaces and welding booths, heretofore

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SWEDISH COUNT AT FORD: V. Y. Tallberg, left, engineering executive of Ford Motor Co., shows Ford's assembly line to Count Folke Bernadotte, nephew of King Gustav V of Sweden, and the Countess Bernadotte, former American heiress. NEA photo

located on the first floor, have been moved to the second, eliminating superheated floors and faulty ventilation.

More than $80,000 is being spent to provide 150 refrigerated drinking fountains for the employees. Improved toilet and lunchroom facilities are being provided where possible. In many instances heavy hand work is being eliminated. The charging platform, for instance, where hundreds of tons of scrap are handled daily, is being mechanized. New dust collector systems will provide cleaner air and promote better health and efficiency.

Registration of 28,913 new motor trucks in 42 states for April is reported by R. L. Polk & Co. This compares with 48,479 registrations for the comparable month and states in 1941. Heaviest registrations during April were reported in the 5000 lb and under weight classification, with trucks weighing 10,000 to 14,000 lb second. A total of 115,727 new trucks have been registered since the start of the year, as compared with 209,642 for the same period and states in 1941.

General features of the Kaiser special automobile have been announced. They include box-type frame, all steel body with safety glass throughout, self-centering hydraulic brakes and extra wide wheel rims. The longer stroked shock absorbers have been incorporated into the chassis design. Helical springs are used in the front suspension and semi-elliptic springs, rubber mounted with rubber inserts between the leaves, are used in the rear.

Production of Oldsmobiles in plants in Lansing, Mich., was further adjusted recently to include for the first time the "66" series for 1946, according to S. E. Skinner, general manager of Oldsmobile, and vice president of General Motors.

The "66" series cars incorporate 100-horsepower engines; are of 119-inch wheelbase and 204-inch overall length. They are available in all standard colors in either solid or two-tone combinations.

"Currently we are concentrating on production of four-door sedans, club (two-door) sedans and club coupes in the '66' design," said Mr. Skinner. "We are hopeful of being able to include convertible coupes beginning early in July, followed possibly in August with station wagons.

Supply of Materials Uncertain

"Our schedules are dependent largely on the availability of materials and it is not possible to predict with complete accuracy what our production will be. However, we plan to build as nearly a complete line of '66' types as conditions will permit. Manufacture of '70' and '90' series cars likewise depends on availability of materials. Output of these types will be increased in direct ratio to receipt by us of the supplies needed for their manufacture," he said.

Available in the "66" series cars as optional equipment at extra cost is the General Motors hydra-matic drive.

Walter P. Reuther of the UAW-CIO continues to wield the cudgel in the press and on the radio against increases in automobile prices.

He takes the familiar line used all through the General Motors strike that wages can be increased without raising prices, but instead of admitting the only way to do this is by increasing the productivity of labor, he would do it by legislative fiat, meanwhile denouncing all corporations as greedy monsters waxing fat on profits squeezed out of unsuspecting consumers. The harangue has grown a little wearisome, and it is echoed in other union quarters, such as a recent letter on the subject purportedly written by R. T. Leonard, head of the Ford local.

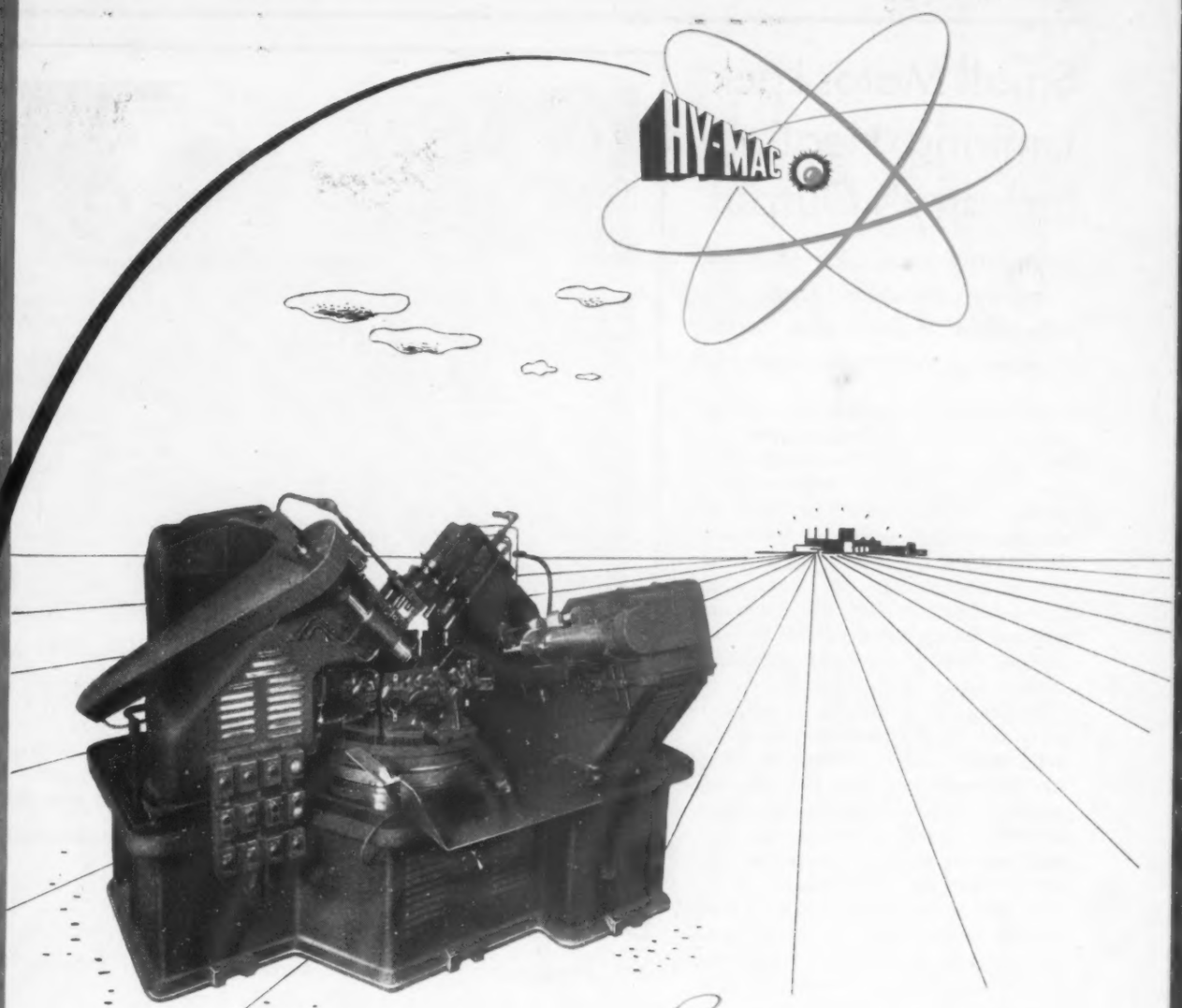
W. K. Kelsey, writing in the *Detroit News*, offered a pretty sound reply, observing: "As long as we have our present system of economy, men will try to better their condition at the expense of other men, for the simple reason that no number of men act together with sufficient power to revise the system wholly, in the interests of all. What's the answer? There isn't any, at present. There may be, a few thousand years hence, if man survives that long. It will have to take the shape of greater goodwill and general co-operation; and in the present state of human education, that is —apparently—impossible."

Army X-Ray Penetrates Twelve Inches of Steel

A 20,000,000-volt betatron unit, or x-ray machine, with penetration through 12 inches of steel, has been installed at the U. S. Army Ordnance Department's Picatinny Arsenal in New Jersey, in a building especially constructed for it. It will be used for revealing cavitation and other imperfections in artillery shells and bombs.

Originated by the University of Illinois, the unit was manufactured by the Allis-Chalmers Mfg. Co., Milwaukee. It is a duplicate of the initial machine of this type now in operation at the Rock Island Arsenal. A smaller unit of similar design is slated for the Aberdeen Proving Ground.

Shells and bombs to be examined are placed on a wide iron ring or conveyor belt which revolves around the betatron machine. The cavitation which the machine is intended to locate occurs when the TNT or other bursting charge is loaded imperfectly and does not pack tightly in the bomb or shell but leaves air bubbles or cavities. Such cavitation is apt to cause premature explosions.



Emblematic OF NEW HORIZONS

Another "HYMAC" special purpose machine simplifies a series of operations on an automobile part . . . a four stage machine for drilling, spotfacing, counterboring and tapping of the vacuum holes in intake manifold . . . Cycle of Operation is entirely automatic except for loading and unloading (1) Part manually loaded and clamped into position (2) Upon closing safety door—electric contact is made and the machine automatically indexes to position—all of the heads moving forward and completing their operation (during the cycling time of the heads, another part is loaded). (3) Part is unloaded. Production Rate: 120 manifolds per hour. Machine is hydraulically operated and electrically controlled . . . Send us a print of a part that is to be processed, together with the production requirement and our engineering department will make recommendations and preliminary proposal without obligation.

Also send for eight page brochure which completely outlines our facilities.

HYDRAULIC MACHINERY, INC.

12825 FORD ROAD Dearborn, Michigan

HYDRAULIC MACHINERY—Western Division Glendale, California

Small Motor Lack Limiting Heating Industry's Output

Capacity production of $750 million annually could be reached if fractional horsepower motors were available

SHORTAGE of fractional horsepower motors is the major obstacle preventing the heating and air conditioning industry from reaching its capacity output of $750 million a year, according to Frank E. Mehrings, president of the National Warm Air Heating & Air Conditioning Association.

The industry is currently producing furnaces, air conditioning units, blowers, registers, filters, controls and humidifiers at about 60 per cent of capacity.

Speaking before the annual midyear convention of the association at Edgewater Beach Hotel, Chicago, recently, Mr. Mehrings said that the potential capacity of $750 million represents about one million complete units a year, and manufacturers expect the market to support this level for several years.

At present the industry is more than 300,000 motors short of requirements, Mr. Mehrings declared, and added that this shortage is expected to be intensified throughout the rest of this year.

Commenting on the market, Mr. Mehrings said that about eight million warm air heating units are now in use, and there are eight and one-half million new homes and 19 million home heating units which need replacement.

Westinghouse To Modernize Atom-Smashing Equipment

A broad program of research into nuclear physics and the problems associated with the conversion of atomic energy into a useful source of power has been announced by Westinghouse Research Laboratories, Pittsburgh.

Dr. L. W. Chubb, director of the laboratories, said that the program will be in direct charge of Dr. W. E. Shoupp, manager, electronics department, Westinghouse Electric Corp., whose research before war culminated in the codiscovery of photofission.

First step in the program, Dr. Shoupp disclosed, is modernization of the 65-foot high "atom smasher" at the laboratory. Workmen have already begun resurfacing the huge pear-shaped tank which encloses the working apparatus.

RAIL DE-ICER: A new method of applying steam heating to tracks in car storage yards to prevent formation of ice is demonstrated above. Three-quarter inch Rayduct, Bethlehem Steel's radiant heating pipe, is installed under the ball of the rail and is held in direct contact with it by galvanized bolts welded to the rail. Protection of the pipe from melting snow and acid drip-water from cars of washed coal is achieved by installing a cover plate with curved top to fit under rail ball and over the pipe

BRIEFS . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Cincinnati Tool Co., Cincinnati, has purchased the patterns and good will of the line of clamps formerly manufactured by E. C. Stearns & Co., Syracuse, N. Y.

—o—

Seiberling Rubber Co., Akron, has acquired the former Continental Motors plant at Garland, Tex., and will use the facility to increase production of tires and other rubber products.

—o—

Detrex Corp., Detroit, has opened its new office and warehouse at 435 Ionia Ave. S. W., Grand Rapids 2, Mich.

—o—

Schlueter Mfg. Co., St. Louis, metal household utensil maker, plans an office and factory building at a cost of approximately $800,000.

—o—

Brown Instrument Co., Philadelphia, has bought the five-story structure at 2221 North Broad St., Philadelphia, which it had previously leased for storage space.

—o—

Batavia Metal Products Co. Inc., Batavia, Ill., has leased from War Asse's Administration the plant in Centerville, Iowa, which was operated during the war by Hercules Mfg. Co., that city.

—o—

Eureka Williams Corp., Bloomington, Ill., has begun a $600,000 expansion program which will provide facilities for manufacturing vacuum cleaners, cordless electric irons and electric garbage disposal units.

—o—

Linde Air Products Co., New York, has announced that its Tonawanda, N. Y., ceramics plant will terminate atomic bomb operations in the near future.

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Edw. S. Christiansen Co., Chicago, has moved its Eastern Division sales offices from the 32nd floor of 30 Rockefeller Plaza, New York, to showroom and office space on the mezzanine floor of that building.

—o—

Air Products Inc., Chattanooga, Tenn., has moved to Emmaus, Pa.

—o—

Crocker-Wheeler Electric Mfg. Co., Ampere, N. J., recently suspended oper-

ations for a month because of steel and copper shortages.

—o—

Metroloy Corp., New Rochelle, N. Y., will enter the precision castings field shortly. Stainless steel will be the principal material used.

—o—

National Precision Tool Co., Pittsburgh, has been formed recently, taking over the machinery, equipment and inventory of Precision Threads Co., Bellevue, Pa.

—o—

Firecraft Corp., Chicago, has moved to 3110 West 51st St., Chicago 32.

—o—

John A. Roeblings Sons Co., Trenton, N. J., suspended operation for two weeks beginning June 29. Shortages of pig iron and scrap are the cause of the suspension.

—o—

Chemical Construction Corp., New York, has began construction of a new pilot plant at Linden, N. J., where it will conduct experimental work.

—o—

Indiana Steel Products Co., Chicago, has acquired the plant and facilities of Cinaudagraph Corp., Stamford, Conn., and will operate it as Cinaudagraph Division.

—o—

General Machinery Co., Hamilton, O., has acquired United Welding Co., Middletown, O.

—o—

National Federation of American Shipping Inc., Washington, has moved to 1809 G St. N. W., Washington 6.

Portsmouth Steel Takes Title to Plant, Coal Firm

Ownership of Portsmouth, O., steel works and Emperor Coal Co. passed from Wheeling Steel Corp. to newly-formed Portsmouth Steel Corp. on July 1 as Elmer A. Schwartz, president of Portsmouth handed a check for $12 million to L. W. Franzheim, vice president and treasurer of Wheeling. With business booked for three years ahead, the new company is said to be in full production on a variety of steel products.

Prefabrication Institute Inducts 22 New Members

Twenty-two prefabricators in 15 states have been elected to membership in the Prefabricated Home Manufacturers' Institute, Harry H. Steidle, manager, has announced. The institute now includes 56 manufacturers in the United States and Canada.

The new members admitted recently are: Bralei Homes Inc., North Little Rock, Ark.; Hamill & Jones and Kaiser Community Homes, Los Angeles; Claude T. Lindsay Inc., San Francisco; Ply-Wel Industries, Oakland, Calif.; City Lumber Co., Bridgeport, Conn.; Maurice R. Harrison, Hialeah, Fla.; Georgia Consolidated Contracting Co., Ellaville, Ga.; Home Corp. of America and Home-Ola Corp., Chicago; Shappert Engineering Co., Belvidere, Ill.; Pre-Fab Industries, South Bend, Ind.; Maryland Modern Housing Corp., Halethorpe, Baltimore; Tovell Construction Co., Baltimore; Nichols & Cox Lumber Co., Grand Rapids, Mich.; Winner Mfg. Co., Trenton, N. J.; Dade Bros. Inc., Mineola, N. Y.; Johnson Quality Homes, Brooklyn, N. Y.; Raleigh Prefabricated Homes Inc., Raleigh, N. C.; Conway Homes, Conway, S. C.; Texas Prefabricated Homes, Dallas, Tex.; and Midwest Housing Corp., Janesville, Wis.

Consolidated Industries Moves, Plans New Products

Consolidated Industries Inc., Lafayette, Ind., manufacturer of stokers and other automatic heating products, is well under way with its new $600,000 expansion program. The corporation has moved to its new plant on Route 52 at Lafayette and production has begun.

According to company officials, the new plant is only the beginning of its long-range program which is aimed at invading other markets in the automatic heating field. New products will be added to the Consolidated line in the near future, officials have disclosed.

National Carbon Expanding By Adding 3 New Plants

National Carbon Co. Inc., New York, is materially increasing its manufacturing capacity for batteries, flashlight cases and other plastic products with construction of two new plants in an advanced stage, and a third plant which was recently purchased from Reconstruction Finance Corp. being converted to commercial operations.

The plant acquired from RFC, located in Charlotte, N. C., was operated by National Carbon during the war turning out batteries for the Army Signal Corps, and will be used to produce batteries for hearing aids, radios and other uses. Operations have begun at this plant, but additional new machinery is yet to be installed.

The plants being built are located at St. Albans, Vt., and Asheboro, N. C. When completed the St. Albans plant will be used for production of flashlight cases. Production is scheduled for early fall. The Asheboro plant will manufacture plastic fabric for shower curtains, garment bags, etc.

Republic Steel Adds Facilities At Youngstown

New 48-inch strip mill expected to double production at 84-inch mill. Other improvements will raise capacity

FINISHED steel capacity in the Youngstown district plant of Republic Steel Corp., Cleveland, will be materially increased with completion late this year of a new 48-inch strip mill.

In the past the capacity for iron and steelmaking of Republic's five Youngstown blast furnaces, 15 open-hearth furnaces and two bessemer converters has considerably exceeded the finishing capactity of the plant. As a result, much of the semifinished steel has had to be shipped to other plants for rolling.

The new strip mill facilities are being installed by adding three 4-high finishing stands to the present 84-inch reversing plate mill, together with coiling and coil conveying equipment. It is expected to more than double production of the present 84-inch mill and to produce a greater variety of finished products. Sixty per cent of the anticipated production will be skelp for making electric weld pipe. The balance will be strip steel for further processing in Republic's Warren, O., district.

Although the new strip mill will be installed in the existing 84-inch plate mill building, it will necessitate construction of three additional buildings—a slab storage area, coil storage area, and a brick motor room building. Four heavy-duty cranes with capacities between 30 and 50 tons will be installed and one reheating furnace will be built to supplement the three now in use at the plate mill.

A second project at the Republic plant will be the installation of a new steam turbine high-pressure blower on No. 3 blast furnace. The blower will be able to provide a blast of 90,000 cubic feet per minute at 35 pounds pressure and is expected to raise the capacity of the furnace substantially. This blower completes the modernization of the plant's blowing equipment.

At the 10-inch skelp mill at the bessemer plant, a new reheating furnace is being installed which will increase the capacity of that mill from an 18,000 tons per month average to about 21,500. A 36-inch edger will be installed on the 14 and 16-inch bar mills.

Expect Slow Price Rise On Coast

Sudden boost in manufacturers' quotations as result of demise of OPA is thought unlikely in San Francisco district

SAN FRANCISCO

INDICATIONS at present are the end of OPA will not mean a sudden sharp boosting of prices by most San Francisco area manufacturers.

They expect, however, that price levels will rise in many lines over a longer period.

The chief factor probably will be raw material costs. For example, a manufacturer of tin cans says he has contracted to sell his production at present prices providing the price of steel is not increased. However, if steel prices rise an escalator clause in his contracts will permit him to raise prices on his cans to take care of the raw material boost.

Another equipment fabricator here also says his policy will depend largely on action taken by his parts suppliers. He now believes that the prices on his products are high enough, but if the parts which go into the finished equipment are increased, then obviously it will be necessary for him to raise his prices.

There are exceptions, of course. For instance, one local producer of hardware used chiefly in building construction expects to make price increases ranging up to 25 per cent on some of its products. The average increase on the company's entire line will be about 10 per cent.

Other companies already have been decontrolled, and therefore will not be affected by OPA's demise. One example is local machinery companies, which say they plan no increase in prices at present.

Still other firms recently have been granted price increases by OPA, such as business machine producers. For at least the time being it is unlikely that these firms will increase prices more than the amount previously allowed by OPA.

As for the effect on material supplies, opinions vary. Generally, however, most companies see no immediate easing of present shortages of raw materials. The main reason is that pentup demand is still far greater than the country's ability to produce and until supply begins to equal demand there is almost certain to be shortages in many lines.

The San Francisco Chamber of Commerce has authorized a fact-finding survey designed to promote an increase in the manufacture of nonferrous metal products in the San Francisco Bay Area.

The survey will cover the following:

1—Availability of aluminum, brass, copper and manganese in primary and semi-finished forms in the San Francisco area.

2—Finished products being sold in the western market but not being manufactured here.

3—Unused capacity in existing San Francisco area metal-fabricating plants.

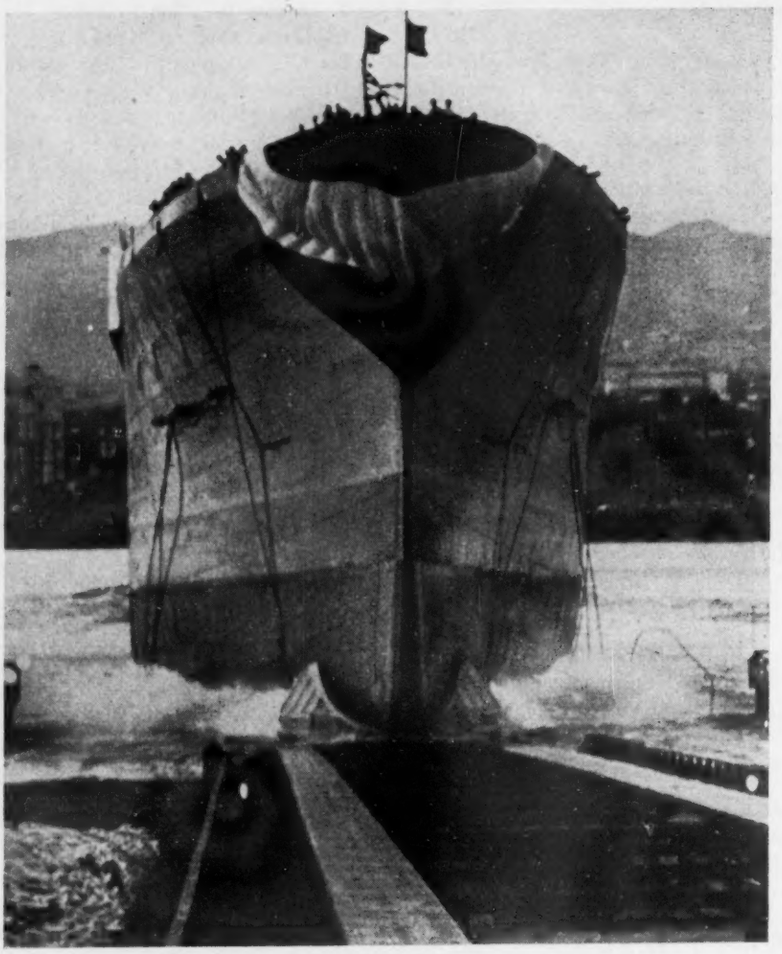
4—Opportunities for new projects to produce fabricated metal products.

Henry J. Kaiser has announced that production of aluminum will get under way early in July at the two Spokane, Wash., plants leased by Permanente Metals Corp. from the Government.

Remelt furnaces at the Trentwood mill now are in operation, and hot rolling facilities will be started shortly. The Mead reduction plant will be ready for production by the middle of the month.

Mr. Kaiser said schedules call for graduating capacity and that aluminum pig from Metal Reserve Corp. and scrap will be used to operate Trentwood until Mead's production is sufficient to supply the demand from the Trentwood rolling mills. Permanente's alumina facilities, leased from the Government at Baton Rouge, La., will not be in operation until later this year.

Mr. Kaiser forecasts that the two Spokane plants will produce approximately 80 million pounds of aluminum by the end of 1946.



WEST'S BIGGEST LINER: The *President Cleveland*, largest commercial passenger vessel built on the West Coast, goes down the ways at the Bethlehem-Alameda shipyard, Alameda, Calif. Originally designed as a Navy troop ship and converted to civilian use when the war ended, the 610-foot, 22,574-ton vessel has a speed of 19 knots. NEA photo

Expect Pacific Coast Business To Respond Favorably to Decontrol

LOS ANGELES

WITH stocks at a low point compared with potential sales outlets, local steel warehousemen last week were waiting to see how elimination of price control will affect their market.

An official of the Southern California Warehousemen's Association said: "All business, including ours, is bound to respond favorably to the changed outlook."

Meanwhile the steel business in general, at all levels with the possible exception of some foundries, remains in the doldrums in southern California, due to the lack of sheets and nearly every other item besides small rods.

Some 254,000 telephones have been added to the Pacific Telephone & Telegraph Co. and its subsidiaries, Southern California Telephone Co. and Bell Telephone Co. of Nevada, a report in Los Angeles disclosed last week.

N. R. Powley, president of P. T. & T., said the increase is unequaled in any like period in company history. As of last May 31, 2,886,000 instruments were in service.

The Mineral Wool Insulations Co., located on a site near the Kaiser Steel Co. mill at Fontana, Calif., last week announced start of a $100,000 building program to manufacture insulation materials from blast furnace slag and coke.

Beginning of production is set for next Sept. 1. Plant capacity is designed for 50,000 tons annually, with initial operation aiming at 20,000 tons production.

Markets will be throughout the western states and in the Orient.

Among products to be made are baked batts, paper wrapped blankets and granuated wool for the construction industry. The finished product resembles lambs' wool, it is said, and will be made by processes recently acquired by American technicians during surveys of German insulation industries.

Harvey H. Head, formerly with Kaiser Co. Inc., is president of the new concern; Charles W. Hawthorne, formerly with Johns-Manville, vice president and chief engineer; Richard L. Gray of Los Angeles, secretary, and C. T. Sauers, formerly with W. A. Bechtel Co., is treasurer.

The concern will maintain offices in Los Angeles and San Francisco.

The growth of San Diego Harbor has necessitated a program for a $2,000,000 expansion of that port's shipbuilding plants, according to an announcement last week by Joe Brennan, port director, to the San Diego Harbor Commission.

Mr. Brennan reported that National Iron Works will construct new ways with a turntable equipped to handle seven boats at once; Lynch Shipbuilding Co. plans to build a 1000-foot pier and new ways; San Diego Marine Construction Co. will have facilities for eight boats abuilding; Campbell Machine Co. will operate a large floating drydock, and Associated Repair Basin will lengthen its pier to the 1000-foot size besides adding new ways.

Mr. Brennan said that three large canneries are seeking tideland space.

Recent installation of the new stress relieving furnace at its Los Angeles plant places Bethlehem Pacific Steel Corp. "in a position to satisfy increasing demands by West Coast spring manufacturers for an 'as rolled' spring steel that is uniform in hardness," according to L. J. Scracco, general superintendent of the plant.

Since what are known as "sensitive" type steels have a definite tendency toward air hardening during the cooling process on the mill hot bed, Bethlehem Pacific's new furnace, which on the outside is 32 ft. long, 8 ft. high and 12 ft. wide, was designed to offset or relieve the stresses resulting from rapid cooling, by means of an additional heat treatment known as sub-critical anneal.

The new stress relieving furnace at Bethlehem Pacific's Los Angeles steel plant has a capacity of 50 net tons per charge. It is underfired with gas as fuel and is equipped with fifteen burners, spaced two ft. apart, on each side. These are controlled in banks of three, each burner baffled on the inside in such a manner as to prevent flame impingement on the steel. The load rests on piers elevated 20 in. above the burner levels. The roof of the furnace is removable, and is in four sections, each equipped with a chromel-alumel thermocouple, inserted into a ni-chrome-protection tube, all leading into a Leeds Northrup four point recording micromax, which can be set to operate the furnace automatically.

FOR SALE: More than 1500 retired Army vehicles, mostly jeeps, are offered for sale as surplus at Benicia, Calif., arsenal. First choice of the vehicles will go to service men holding priority certificates. NEA photo

MEN of industry

Marshall M. Smith has been elected vice president and director, E. W. Bliss Co., Brooklyn. Mr. Smith had been with the company since February, 1945, as director of foreign operations, and only recently was made assistant general sales manager.

—o—

Frederick A. Stevenson has been elected a member of the executive committee, and **John L. Farrell** a director, Carter Carburetor Corp., St. Louis, subsidiary of American Car & Foundry Co., New York. Mr. Stevenson is president, member of the executive committee and a director, American Car & Foundry Co. Mr. Farrell is a member of the law firm of Hardy, Stancliffe & Hardy, New York, and a director of Edward Ermold Co., New York.

—o—

Harry W. Barkley has been elected president, National Tool Co., Cleveland. He had been executive vice president and general manager of the company since Aug. 1, 1945. Prior to that, he had been with the Ford Motor Co., Dearborn, Mich., for 27 years. Mr. Barkley succeeds **Lewis F. Jubenville** of Detroit, who had been serving as president ad interim since April, 1945. Mr. Jubenville will continue as director and member of the executive committee of the company.

—o—

J. F. Brooker has been appointed assistant superintendent, forge department, Canton, O., plant, Barium Steel & Forge Inc., Canton. He will also be in charge of the hammer shop at the plant. Mr. Brooker had been night superintendent, Cleveland plant, Johnston & Jennings Co., Cleveland. **Gene Walker** has been appointed to the sales organization of J. Herbert Cox & Associates, Cleveland, exclusive representatives for Barium Steel & Forge Inc.

—o—

Neill S. Brown, for 26 years associated with Ford Motor Co., Dearborn, Mich., has been appointed general superintendent of the company's Lincoln Division, Detroit. Mr. Brown had served as superintendent of the Ford company's Chester, Pa., assembly plant since 1938, and succeeds **J. M. Waggoner,** who has been transferred to the Rouge plant.

—o—

R. A. Fischer has been appointed manager, purchasing department, International Harvester Co., Chicago, succeeding **R. M. McCulloch** who has retired. Mr. Fischer has been associated with the company's purchasing department since 1923, and has held various positions. Mr. McCulloch began his career in 1904, with the International Harvester Co. of Canada Ltd., Hamilton, Ont. He entered the purchasing department of the company's general office in Chicago in 1926, and in 1937 was named manager of the department.

—o—

Sam R. Clement has been promoted to assistant general manager of sales, Phosphate Division, Monsanto Chemical Co., St. Louis. Mr. Clement had been assistant general branch manager of the company's Birmingham sales district. The Monsanto company has named the following four industrial scientists who will be awarded leaves of absence at full salary for an academic year of study at universities of their choice: **Louis P. Wenzell Jr.,** investigation group leader, East St. Louis plant; **Colver P. Dyer,** group research leader, Merrimac Division plant, Everett, Mass.; **Carlyle John Stehman,** group leader, central research department, Dayton, O.; and **Eli Perry,** research engineer, Plastics Division plant, Springfield, Mass.

—o—

Dr. Waldo L. Semon, director of pioneering research, B. F. Goodrich Co., Akron, has been presented his 20 year service pin by **John L. Collyer,** company president. **Alfred Cutler** has been appointed sales representative, International B. F. Goodrich Co. He will have headquarters in Switzerland. Mr. Cutler had been in industrial products sales of the domestic company in the Philadelphia district for the last several years.

—o—

Ian D. Patterson has been appointed to the newly created post of assistant manager, Chemical Product Development Division, Goodyear Tire & Rubber Co., Akron. He will be assistant to **Dr. C. W. Walton.** Mr. Patterson has been with the company since 1921.

—o—

Dr. Harry R. Copson, research chemist, Bayonne Research Laboratory, Bayonne, N. J., International Nickel Co., New York, has been awarded the Charles B. Dudley Medal, presented by the American Society for Testing Materials, Philadelphia, for his 1945 paper on "A Theory of the Mechanism of Rusting of Low Alloy Steels in the Atmosphere." The presentation was made at the recent meeting of the society in Buffalo.

—o—

William T. Birney, director of sales, Winchester Repeating Arms Co., West-

HARRY W. BARKLEY

R. A. FISCHER

DR. HARRY R. COPSON

his "Q.C." keeps white elephants off your presses

One of the kingpins in Armco's production of Quality Controlled Steels is the mill representative. In a sense he works for *you*, not us.

This roving ambassador of "Q. C." who visits your plant has only one objective: to see that you get the *one right sheet steel* for your products. He wants no "white elephants" holding up your presses or clogging production lines.

"Q. C." — Quality Control — is no stranger to Armco mill representatives and production supervisors. Control charts and statistical analysis are developments of recent years; they help assure consistent production of prime Armco sheets.

But control charts are only part of the story. For almost 20 years "Q. C." has been a live, familiar term in the Armco mills. It governs the control of sheet steels even before the "charge" goes into the open-hearth furnace.

INDIVIDUAL ROUTINGS

This means the salesman, mill representatives and metallurgists study your order and its requirements—determine for what purpose the steel will be used and how it will be fabricated. Then, on your individual routing card, metallurgists specify the mill routing that will give your sheet steels the properties they need.

In all these deliberations the Armco mill representative first keeps *your* problems in mind. He is your assurance of a high "Q. C." in the Armco special-purpose steels that go into your products. The American Rolling Mill Company, 3401 Curtis St., Middletown, O.

SPECIAL PURPOSE ★ ARMCO ★ SHEET STEELS

THE AMERICAN ROLLING MILL COMPANY

GAIL M. RUTLEDGE

WILLIAM H. NORTH

DONALD KEATING

ern Cartridge Co., and Bond Electric Corp., New Haven, Conn., divisions of Olin Industries Inc., has retired. He had been with Winchester since 1897, and was a director of sales for 25 years.

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Gail M. Rutledge has been appointed director of national accounts and coordinator of branch office activities, General Detroit Corp., Detroit. He joined the corporation in 1944.

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Russell Ransom has been appointed sales representative for North Carolina and South Carolina, Electric Machinery Mfg. Co., Minneapolis. He has headquarters in Charlotte, N. C. Mr. Ransom was in charge of research and development, Clark Controller Co., Cleveland. He was also a director of that company.

—o—

Rolland W. Simpson, sanitary engineer, has joined the staff of Gilbert Associates Inc., Reading, Pa. During the war, he was identified with the War Department, Corps of Engineers.

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W. A. Hambley has been appointed general manager, Slinger Foundry Co., Slinger, Wis., and general manager, Foundry Division, Falls Mfg. Co., Menomonee Falls, Wis. He had been chief metallurgist, Foundries and Pattern Division, Allis-Chalmers Mfg. Co., Milwaukee.

—o—

The following engineers have recently been assigned to sales or service work in various territories of Foxboro Co., Foxboro, Mass.: **Paul A. Hilli,** resident engineer, Hartford, Conn.; **John M. Waters,** sales engineer, reopening the Birmingham office; **John W. Fulton,** service engineer, Chicago; **Robert E. Rogers,** branch manager, Los Angeles; **Richard P. Parshall,** sales engineer, Chicago; **Edward E. Pettibone,** sales engineer, Cleveland; **Hubert Gordon Morgan,** sales engineer, Cincinnati; **John L. Pierce,** sales engineer, Atlanta; **John W. Garden,** sales engineer, Pittsburgh; **Joseph J. Connelly,** sales engineer, Chicago; **Mark B. Bagley,** service engineer, Los Angeles.

—o—

William H. North, recently released from the Army, has joined the sales department, Ferry Cap & Set Screw Co., Cleveland, as assistant to **H. Allen Hall,** secretary and in charge of mill supply and hardware jobber sales.

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The Milwaukee Association of Purchasing Agents has elected the following officers to serve during the year 1946-47: President, **Edward L. Block,** Unit Drop Forge Division, Fuller Mfg. Co., Kalamazoo, Mich.; vice president, **Frederic G. Syburg,** Chain Belt Co., Milwaukee; secretary, **Clifford M. Dawley,** Ampco Metal Inc., Milwaukee; treasurer, **Howell Pritchard,** Kearney-Trecker Products Corp., Milwaukee; and national director, **Lyall C. Stilp,** Kimberly-Clark Corp., Neenah, Wis.

—o—

Charles K. West, commercial vice president in charge of the Atlantic district, with headquarters in Philadelphia, General Electric Co., Schenectady, N. Y., has retired. He had been with the company since 1899, and became commercial vice president in 1929. Mr. West has been succeeded by **O. F. Haas,** who has been assistant manager of the company's Atlantic Division, New York, and head of the lamp department's Continental Division, Philadelphia. Mr. Haas started work with General Electric in 1918 at Nela Park, Cleveland. **John C. Morris** has been appointed superintendent of manufacturing of the Resin and Insulation Materials Divisions of the company's chemical department. He had been assistant superintendent for the last year. Mr. Morris has been with the company since 1928. **G. R. LaWall** has been appointed quality control engineer in the Wiring Device and Accessory Equipment Divisions of General Electric. He joined the company in 1919 at Nela Park, Cleveland. He has been an engineer in the Wiring Device and Accessory Equipment Divisions since 1945.

—o—

Donald Keating has been appointed technical service representative, Turco Products Inc., Los Angeles. Mr. Keating, recently released from the Navy, will specialize in the solution of problems relative to cleaning and maintenance in the railroad field for the company. **Thomas G. Franzreb,** also recently released from the Navy, has been appointed to the firm's Technical Service Division staff. He will be in the Los Angeles office, and will assist in solving maintenance problems.

—o—

Joseph E. Workman, Chicago district manager, Latrobe Electric Steel Co., Latrobe, Pa., has been appointed assistant sales manager of the company, effective Aug. 1. **Robert F. Frazur.,** district manager of the company's Toledo, O., office, will replace Mr. Workman as Chicago district manager. **Ralph H. Bailey,** who has been with the company since 1921, will move from his present position as Dayton, O., manager to district manager of the Toledo office.

—o—

Morse Salisbury has been appointed assistant to the executive director, **C. Scott Fletcher,** Committee for Economic Development, New York. Mr. Salisbury had been assistant to the chairman of the President's Famine Emergency Committee.

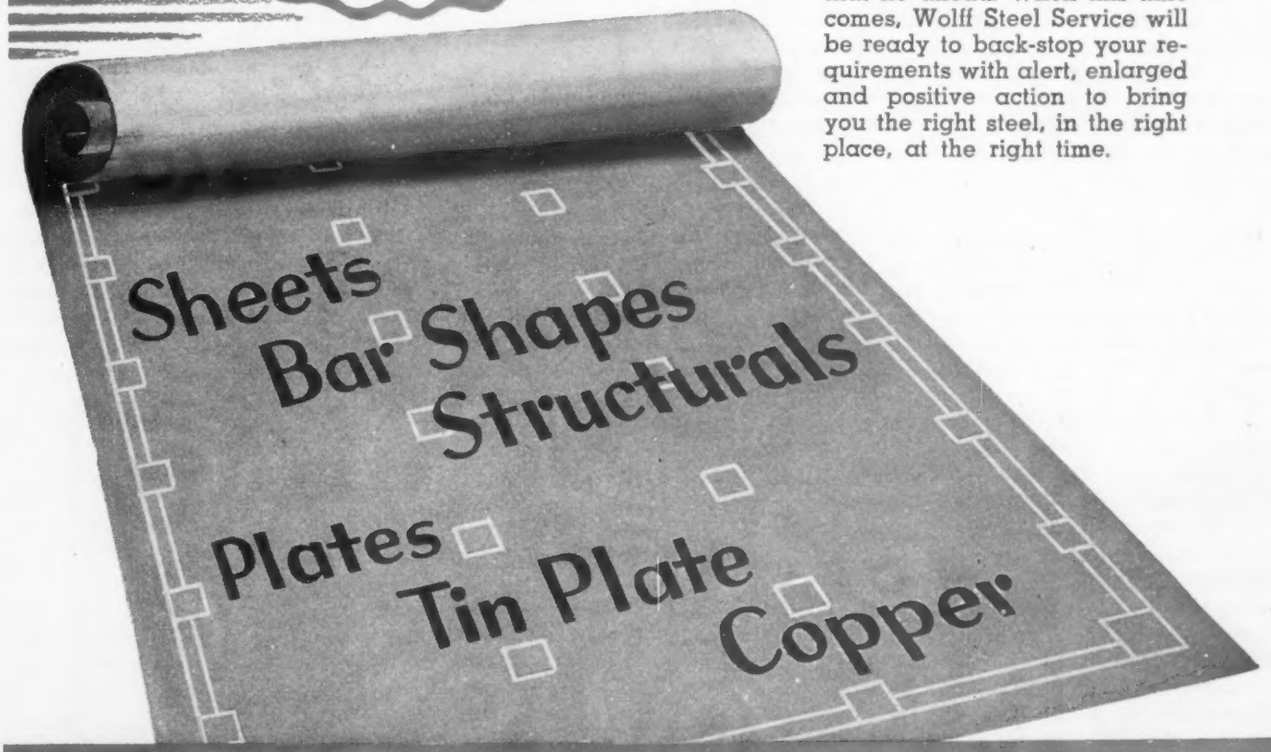
—o—

Maurice F. Holahan, formerly first vice president, International Harvester Co., Chicago, and more recently senior consultant to the management, has retired after 51 years of service with the

Build with Wolff Steel Service

BENJAMIN WOLFF & COMPANY
PRIME STEEL SERVICE
CHICAGO

A new, greatly expanded warehouse is under construction at Benjamin Wolff and Company . . . planned for the active future that you, too, are looking toward. Certainly, these days of frustration in steel are limited, while unlimited are the opportunities that lie ahead. When this time comes, Wolff Steel Service will be ready to back-stop your requirements with alert, enlarged and positive action to bring you the right steel, in the right place, at the right time.



BENJAMIN WOLFF AND COMPANY
General Office and Warehouse — 58th St. at Seeley Ave., Chicago 36, Ill.
Wisconsin Office — 176 W. Wisconsin Ave., Milwaukee 3, Wis.

company. He will continue as a director. He was elected a director of the company in 1935. He was elected first vice president of the company the same year, and held the post until 1945, when he relinquished active duty and became a senior consultant.

—o—

Vernon H. Van Diver has left Union Carbide & Carbon Corp., New York, and opened his own business as merchandising and advertising counselor with offices in New York. He will also head Brad-Vern Co., advertising agency at Garden City, N. Y.

—o—

Gordon Appleby has joined the welding engineering staff, Philadelphia branch office, Lincoln Electric Co., Cleveland. **Terrill S. Hoffman** released from the Army, has been appointed welding engineer in the company's St. Louis area. **E. James Langhurst** has been named welding engineer in the Chicago territory. During the war, he served in the Navy. **Garret S. Parsons** has returned to the company's Los Angeles branch office as welding engineer after three years of Army service. He had been with the firm for nearly 14 years.

—o—

Walter Schutz, Delta Mfg. Co., Milwaukee, has been elected president for the coming year of Milwaukee Association of Industrial Advertisers. **Charles Petri**, Falk Corp., Milwaukee, has been elected vice president of the association, and **E. G. Hamilton**, Delta Mfg. Co., has been re-elected secretary-treasurer.

—o—

Wayne Rawley Jr. has been promoted to division purchasing agent, Blaw-Knox Division, Blaw-Knox Co., Pittsburgh. He has been a member of the purchasing department of the division for the last 12 years. Mr. Rawley joined the company in 1928.

—o—

C. D. Kester has been appointed manager, York, Pa., office, Westinghouse Electric Corp., Pittsburgh. He succeeds **E. M. Powell**, who has been named machinery electrification manager of the company's Middle Atlantic district. Mr. Kester, who had been manager of the machinery electrification section for the Philadelphia district office, has been with the company since 1912. **Arthur P. L'Hommedieu** has been appointed manager for New York State and New England, Westinghouse Home Radio Division. He will maintain headquarters in New York. **Donald Redmond** has been named head of the division's Northwest Pacific district. His headquarters will be in Seattle. **John E. Fox** has been named manager of industrial relations, Westinghouse Lamp Division, Bloomfield, N. J. He succeeds **Charles F. Billings**, who has been named manager of the division's Trenton, N. J., warehouse. Mr. Fox had been assistant manager of industrial relations in the Lamp Division since 1943. **Graham L. Moses, L. R. Hill** and **James DeKiep** of the Westinghouse East Pittsburgh Division have won an award and $100 prize presented by American Institute of Electrical Engineers for the best paper submitted on engineering practice. Their paper dealt with the application of silicones. A similar award in the theory and research classification went to **Dr. G. D. McCann, H. E. Criner** and **C. E. Warren**, also of Westinghouse East Pittsburgh Division, for their discussion of the mechanical transient analyzer.

—o—

W. I. Manley and **Barney D. McCarthy** have been appointed assistant district managers, Youngstown district, Republic Steel Corp., Cleveland. Mr. Manley, who had been superintendent of the mechanical department, will take charge of the Bessemer converter plant rolling mills, pipe mills and service department. Mr. McCarthy will be in charge of the coke plant, blast furnaces and open hearth furnaces. He joined the company in 1936, and in 1943 went to Youngstown as open hearth superintendent.

—o—

R. W. Price has been appointed district representative for the Connecticut area, Norton Co., Worcester, Mass., by the Abrasive Division of the company. He has been representing the firm in the Connecticut area for many years. **O. A. Nierendorf**, who has also represented the company in Connecticut for many years, has been extended an indefinite leave of absence because of ill health. **C. B. Price Jr.**, recently released from the Navy, has been appointed abrasive engineer and will largely take over Mr. R. W. Price's former territory in the northern half of the state. **J. L. Tobey** continues as abrasive engineer in the southern half of Connecticut.

—o—

Clyde E. Cochran, director of engineering, Elwell-Parker Electric Co., Cleveland, has retired. He has been succeeded by **Dwight Hanchette**, associated with him in the company for many years. Mr. Cochran had been with the firm 44 years, and was director of engineering since 1943.

—o—

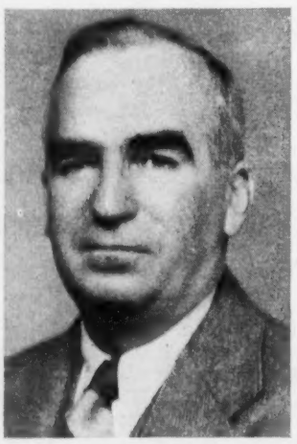
Arthur Batts, president, Carborundum Co., Niagara Falls, N. Y., and **M. W. Thompson**, treasurer and general manager, Hall China Co, East Liverpool, O., have been elected to the board of trustees of the Industrial Hygiene Foundation, Pittsburgh. Mr. Batts will represent the grinding wheel industry on the foundation's board, and Mr. Thompson the pottery industry.

—o—

Robert D. Becker has been appointed manager, Furniture Division, Reynolds Metals Co., Louisville. **H. C. Brown**, who has been acting manager, will continue as assistant to Mr. Becker. Mr. Becker will also continue as industry manager, Housewares Division, which position he assumed at the end of the war, with **John P. Jones Jr.** as his assistant in that division. Mr. Becker joined the company five years ago.

—o—

A. M. MacCutcheon, senior vice president, Reliance Electric & Engineering Co., Cleveland, has retired as an officer and director of the company. He plans to devote his time to special projects of his own, but will remain available



E. STEWART RIGGS

Who has opened a sales office in Cleveland, following dissolution of J. F. Corlett & Co., noted in STEEL, June 24 issue, p. 84.

B. R. TEREE

Appointed project engineer in charge of aircraft development, Weatherhead Co., Cleveland, noted in STEEL, July 1 issue, p. 95.

LEON A. PADDOCK

Retired president, American Bridge Co., Pittsburgh, and Virginia Bridge Co., Roanoke, Va., STEEL, July 1 issue, p. 90.

HENRY K. WATSON

Placed in charge of foreign and domestic sales, Special Coatings Division, Watson-Standard Co., Pittsburgh, STEEL, July 1, p. 95.

ALFONS ALVEN

Who has been elected president, Bearings Co. of America, Lancaster, Pa., noted in STEEL, July 1 issue, p. 90.

to the company as a consultant. Mr. MacCutcheon joined Reliance in 1914. In 1923, he became engineering vice president, and has continued as an officer of the company since that time. He served as president of the American Institute of Electrical Engineers in 1936-37.

—o—

Thomas Lord has been elected president, Lord Mfg. Co., Erie, Pa., succeeding his father, **H. C. Lord,** who becomes chairman of the board. Mr. Thomas Lord had been vice president of the company.

—o—

Thomas J. Watson Jr. has been elected a vice president, International Business Machines Corp., New York. Mr. Watson, recently released from the Army, had been assistant to the executive vice president since January. He originally joined the company in 1937.

—o—

Buckley M. Byers, recently released from the Navy, has been appointed assistant manager, New York office, A. M. Byers Co., Pittsburgh. He will be in charge of export sales

—o—

Frank K. McDanel has been elected president, American Bridge Co., Pittsburgh, and Virginia Bridge Co., Roanoke, Va., subsidiaries of the United States Steel Corp., succeeding **Leon A. Paddock,** retired. **Austin J. Paddock** has been elected to replace Mr. McDanel as vice president in charge of manufacturing operations of American Bridge. He was manager of the company's Gary, Ind., plant. **William A. Thiel,** who had been master mechanic during the last 10 years at the Gary plant, has been promoted to succeed Austin J. Paddock as manager of the plant. Mr. McDanel started almost 42 years ago at the company's Ambridge, Pa., plant. In 1923, he became superintendent of shops. He was elected vice president and a director of American Bridge six years ago, and was in charge of the company's manufacturing operations during the war. Austin J. Paddock began working for the company in 1929. He was named manager of the Gary plant in 1941.

—o—

Frank A. Demms, a director and treasurer, Shenango Furnace Co., Pittsburgh, and Shenango-Penn Mold Co., Dover, O., has retired after more than forty years' association with the W. P. Snyder interests in Pittsburgh. **John K. Foster** has succeeded Mr. Demms as treasurer of the two companies.

—o—

Carl W. Coslow has been promoted to vice president in charge of manufacturing, Plomb Tool Co., Los Angeles. Mr. Coslow joined the company in 1945 as works manager of the Los Angeles plant.

—o—

C. R. Harmon has been named general sales manager, Penn Carbide & Alloy Casting Co., Canonsburg, Pa. Mr. Harmon was formerly manager of specialty sales, Jessop Steel Co., Washington, Pa.

—o—

Joseph J. Lockwood, vice president, Buffalo Division, American Brass Co., Waterbury, Conn., will retire July 31 after more than 50 years of service. He will be succeeded by **Frederick K. Swigert,** works manager. **Hallis L. Poore,** general foreman of the copper mill will succeed Mr. Swigert.

—o—

P. H. Desrosiers has been elected executive vice president and director, Joliette Steel Ltd., Montreal, Que., recently acquired Canadian subsidiary of American Brake Shoe Co., New York. Mr. Desrosiers joined the company in 1916 as secretary-treasurer, and later served successively as sales manager and managing director, until 1932 when he became associated with Sorel Steel Foundries Ltd., Montreal.

—o—

Ralph W. Cook has been appointed sales manager, Bean-Cutler Division, Food Machinery Corp., San Jose, Calif. Mr. Cook began with the company in the Peerless Pump Division, Los Angeles, where he was active in sales and engineering. During the war, he participated in the corporation's amphibian tank program, carrying out expediting, purchasing and field maintenance work in Los Angeles and in Washington.

—o—

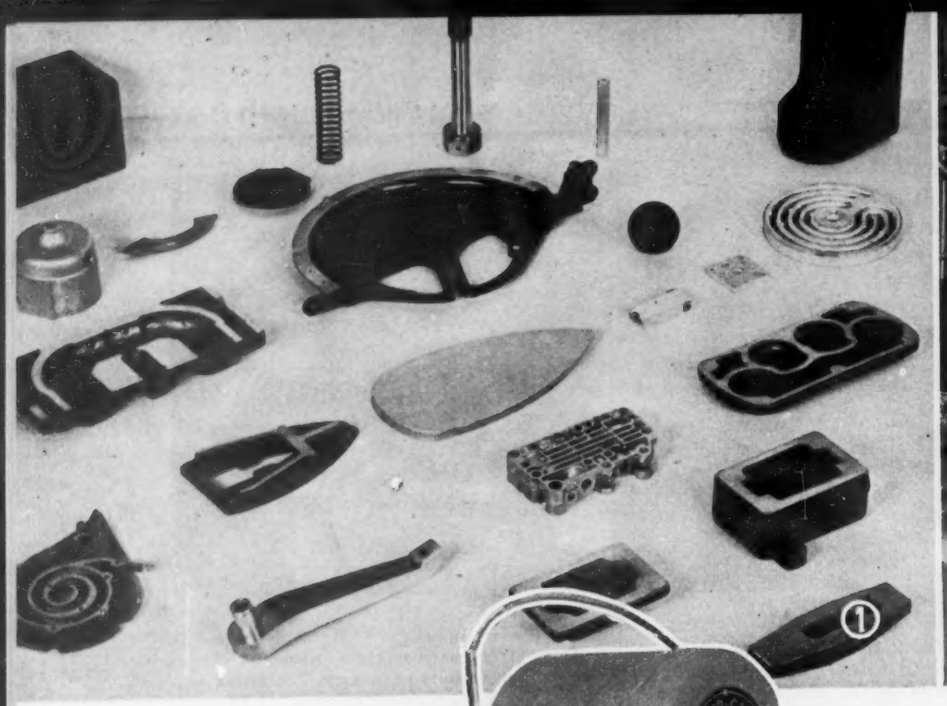
F. H. LaQue, metallurgist, Development and Research Division, International Nickel Co. Inc., New York, has been appointed a member of the board of directors of the Electrochemical Society, New York. He will serve as chairman of the membership committee of the society, too. Mr. LaQue has been reappointed member at large of the American Society for Testing Metals. He has been with International Nickel since 1927.

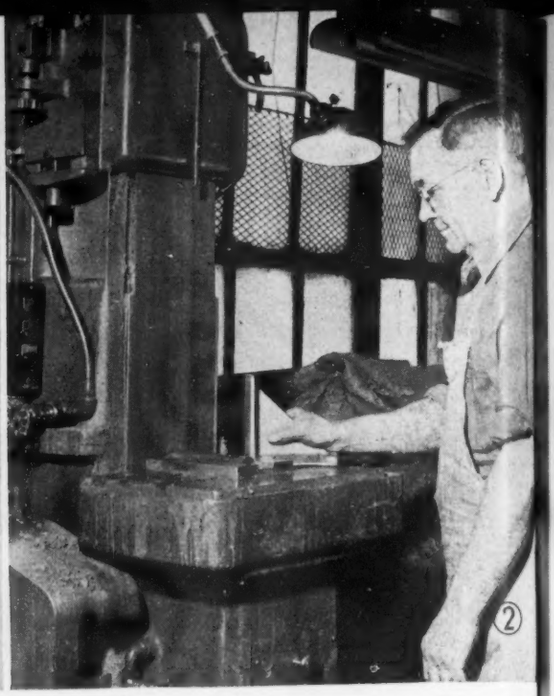
OBITUARIES . . .

William James George, 52, assistant to the president, Edgewater Steel Co., Pittsburgh, died recently. He had been with the company since 1916.

—o—

Karl A. Myers, 54, manager, photo production plant, E. I. du Pont de Nemours & Co., Wilmington, Del., died June 24. He had been with the plant since 1924, having become manager in 1939.





wet belt

By WILLIAM F. SCHLEICHER
Porter-Cable Machine Co.
Syracuse, N. Y.

Process is one of the newer grinding, surfacing and stock removal methods

machining

ABRASIVE belt machining is not new, dry belts having been used for grinding and surfacing wood, certain kinds of ceramics, glass and plastic materials for years. However, the heat generated by dry belt machining sometimes tends to weaken or crack materials of lower fusion points (plastics, rubber and glass) or to weaken the structure of tempered materials. These drawbacks to effectiveness of belt machining have been overcome with the development of wet belt machining.

The new wet belt machining method permits the grinding, surfacing and removal of stock from any ferrous or nonferrous metal, plastic, ceramic, wood composition materials and glass without distortion, discoloring, warping and without weakening the structure of the material. The forming of burrs, which is caused by the grinding heat, is absent on all wet belt machining operations.

Wet belt machining is especially applicable to production runs involving removal of flash, fins, sprues and parting lines. It is further used for surfacing or preparing surfaces parallel to other surfaces to any desired finish. Tool, die, repair and maintenance departments utilize the speed and accuracy of wet belt machining on chamfering, rounding and squaring operations to limits of tolerance within plus and minus 0.001-in. Typical samples of wet belt products are shown in Fig. 1.

Wet belt machining, as developed by the Porter-Cable Machine Co., is a method of grinding, surfacing and stock removal by the cutting action of an abrasive belt traveling at speeds from 2500 to 4500 surface feet per minute over a hardened steel platen. Wet belt surfacing called for a new type of belt. Neither a glue bond nor paper backing would stand up under liquid. So a plastic bond was perfected by the major abrasive manufacturers, with the abrasive plastic bonded to a processed cloth belt. This new type of belt is impervious to water or other coolants and is perfectly flat lapped at the joint.

Belt Used In Wet Belt Machining: By far the most important development, in the field of abrasives, and especially from the standpoint of wet belt machining, is the perfection of the electrostatic method of coating the belt. By this method it is possible to control the

(*Please turn to Page* 114)

Fig. 1—Pieces surfaced by wet belt machining method. All are absolutely flat and parallel to each other. Materials are aluminum, bronze and steel

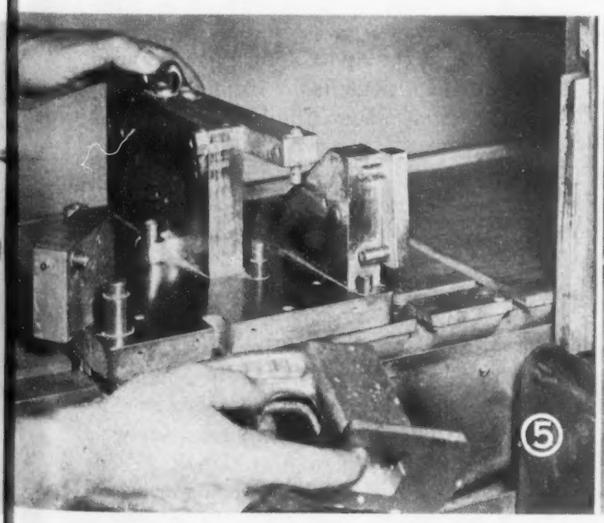
Fig. 2—Surfacing an angular manganese casting at Albert Specialty Co., Chicago

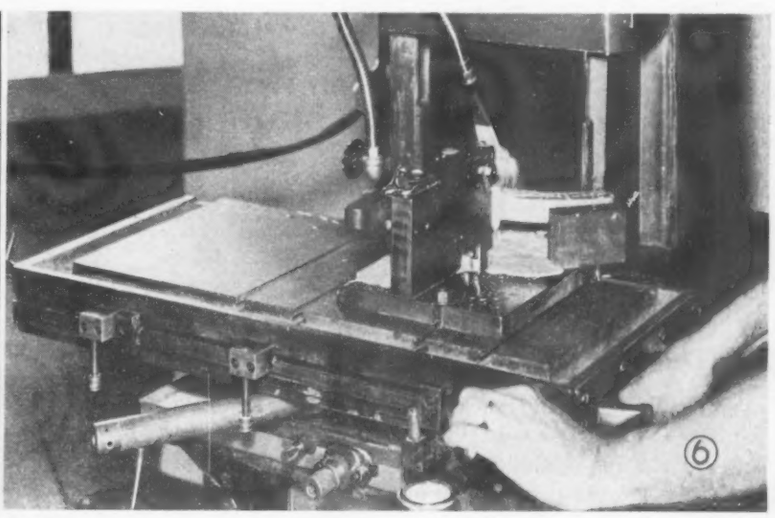
Fig. 3—Precision surfacing of movie equipment on wet belt machines. Note absolute squareness of work to table and belt. This is an example of surfacing a dispersed area

Fig. 4—Automatic feed table used in connection with wet belt machining. Accuracy up to 0.001-in. and closer is possible. No special skill is required for table operation

Fig. 5—Operator placing aluminum casting into a simple jig at Porter-Cable Machine Co. Note window latch which holds boss in place for surfacing

Fig. 6—Stock removal, grinding and surfacing operations are performed to close tolerance with help of automatic feed table. Production was raised 120 per cent over previous machining methods and considerable material was saved by wet belt machining





Effect of sulphur on quality of Sulphite Treated S

There still remains a general opinion that sulphur is always harmful to steel and should be kept as low as possible, an opinion handed down by earlier generations of steelmakers who could not refine steel as it is done today

By GLENN D. BOYER
Metallurgical Department
La Salle Steel Co.
Chicago

INCREASING popularity of alloy steels made by the sulphite process seems to make advisable an examination of the traditional metallurgical concept that sulphur in steel is detrimental and should be used only when the gain in machinability outweighs the supposed loss in static and dynamic physical properties.

Sulphur has long been added to steel to increase machinability. Its effect in this application is plain. Other things being equal, machinability increases proportionately with increased sulphur. Of course, in the case of bessemer steels machinability is further enhanced by the large amounts of nitrogen and oxygen introduced by the process as well as the phosphorous content.

Steels made by the sulphite process as opposed to the older re-sulphurized steels depend on the fluxing action of the process as well as the specific action of the sulphur itself in promoting machinability. In the sulphite process, sodium sulphite is added to the molten steel. This breaks down to form sodium oxide to be later precipitated as the sulphide. The sodium oxide combines with silicates and aluminates and fluxes them out of the bath.

The efficacy of this process is limited to the addition of some 0.02 to 0.03 per cent of sulphur. If more sulphur is desired further sulphur additions such as stick sulphur are required. For this reason, the sulphite treated alloys, such as sulphite treated 8640, have an average sulphur content of about 0.045 per cent and very seldom exceed 0.06 per cent. Since the manganese ranges of these steels vary from 0.60-0.90 per cent to 0.75-1.00 per cent, the old formula of 10 times the sulphur is met.

However, since this ratio was evolved for tool steels it was interesting to test it both against our experience with resulphurized steels and against the literature we have at hand. While this study is by no means exhaustive, it is surprising to find only one writer, Pulsifer, making the definite statement that sulphur in itself is deleterious. The others ranged from such comments as the ASM Handbook's in discussing manganese. (page 563, 1939 Edition): "It counteracts the effect of certain harmful oxides or gases and eliminates the harmful effect of sulphur by combining readily with it to form manganese sulphide."

The E. F. Houghton & Co's "Practical Metallurgy for Engineers" states on page 238: "The effect of sulphur upon the ductility and tenacity of steel, at least up to 0.10 per cent of sulphur, is very slight and may be disregarded. If it exists as iron sulphide, then it is capable of doing great harm in hot working but, when in the form of manganese sulphide, its harmful effects are negligible." Also, on page 239 it is stated that: "It order to get the full benefit of the manganese as a deoxidizer, and as a treatment for sulphide of iron, it becomes necessary to add about three times the theoretical amount of manganese." Since the combining weights of manganese and sulphur are 55 and 32 respectively, this would indicate that 5.2 times the weight of sulphur is necessary.

Another interesting comment is A. H. Staud's "Impurities in Metals", from "Metal—Inside Out", page 101, published by ASM. He states: "Sulphides may have a very detrimental effect on the physical properties of a metal or alloy if it forms a film around the grains. This is the case with iron. A small percentage of sulphur in iron will cause it to be brittle and unworkable. However, this effect may be eliminated by the addition of manganese which forms manganese sulphide and appears as gray globular material within the grains."

Perhaps one more direct quotation may be used. This one is from James P. Gill's lecture, "Alloy Steel," as published in "Modern Steels," Pittsburgh chapter ASM. He says, page 273: "Sulphur is found as an impurity in all steel but is actually added to certain types of steels in order to produce easy machinability. The effects of this element up to as high as 0.05 per cent upon the tenacity and ductility of a well made steel are so slight that they may be entirely disregarded. Its most marked effects are encountered in hot working, that is, rolling or forging the steel while hot. These effects were formerly believed to always be evil ones, because sulphur when it exists in the form of iron sulphide melts at the rolling and forging temperatures of the steel and it cracks and breaks; hence the term "hot shortness" was applied. However, there is a sure remedy to offset such effects by adding manganese to the steel, forming manganese sulphide instead of iron sulphide.

"Manganese sulphide does not melt at the temperatures of rolling and forging and when sufficient manganese is present (that is, about five times as much manganese as sulphur) steels containing sulphur even as high as 0.11 or 0.12 per cent can be hot-worked without cracking or break-

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dSteels

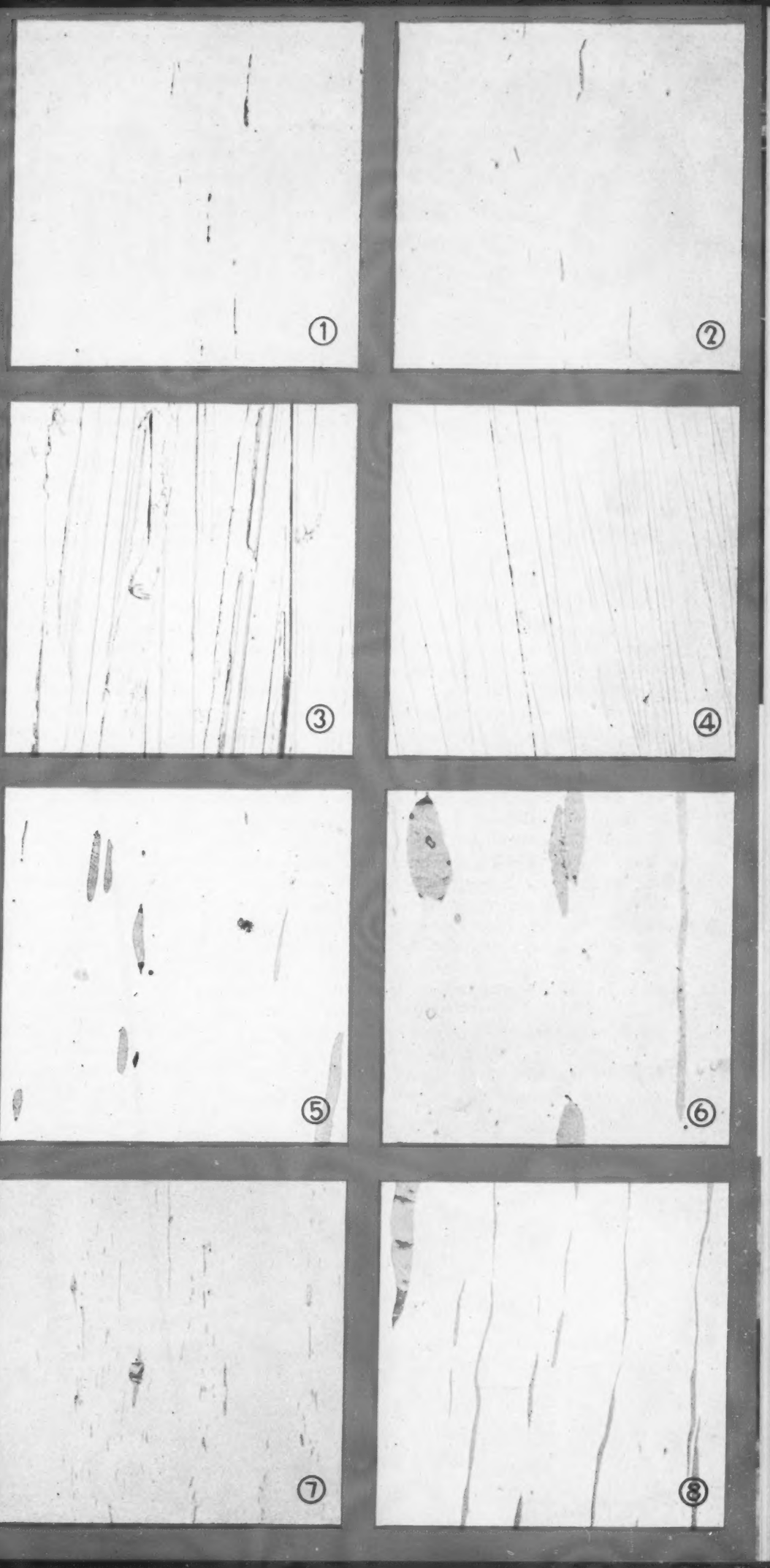


Fig. 1—Sulphite treated 8640. Unetched, X 500

Fig. 2 — Non-resulphurized A-8640 Unetched, X 500

Fig. 3 — Sulphite treated specimen rough ground and photographed. Unetched, X 500

Fig. 4—Sample used in Fig. 3 given a wet polish. Unetched, X 500

Fig. 5—Sulphide arrangement in C-1117, considered desirable for good machinability. Unetched, X 500

Fig. 6 — Bessemer B-1113 showing relatively large inclusions. Unetched, X 500

Fig. 7 — A C-1117 steel reported to possess poor machinability. Unetched, X 500

Fig. 8—Stringer sulphide inclusions in well made C-1144 steel. Unetched, X 500

Steel In Modern Building

Application of mass production techniques in turning out lightweight steel sections expected to extend market in both commercial and residential fields. Corrosion seldom a problem where proper design factors are taken into account

By CARL F. BLOCK
Industry Consultant
Market Development Division
Carnegie-Illinois Steel Corp.
Pittsburgh

APPLICATION of mass production techniques in turning out lightweight steel sections for buildings of both commercial and residential types is expected to extend greatly the market for steel in this important field. Maximum utilization has been made of the inherent properties of steel, and producing companies have developed remarkable uniformity in gage and width, and in providing the surface required for the finishing operations.

Steel can be specially tailored for the job it has to do. That does not mean that a new steel has to be developed for each new application, but rather that a suitable steel can easily be selected from the long list of standard steels. The uniformity of mill product lends itself to the production of identical sections and thus to mass production.

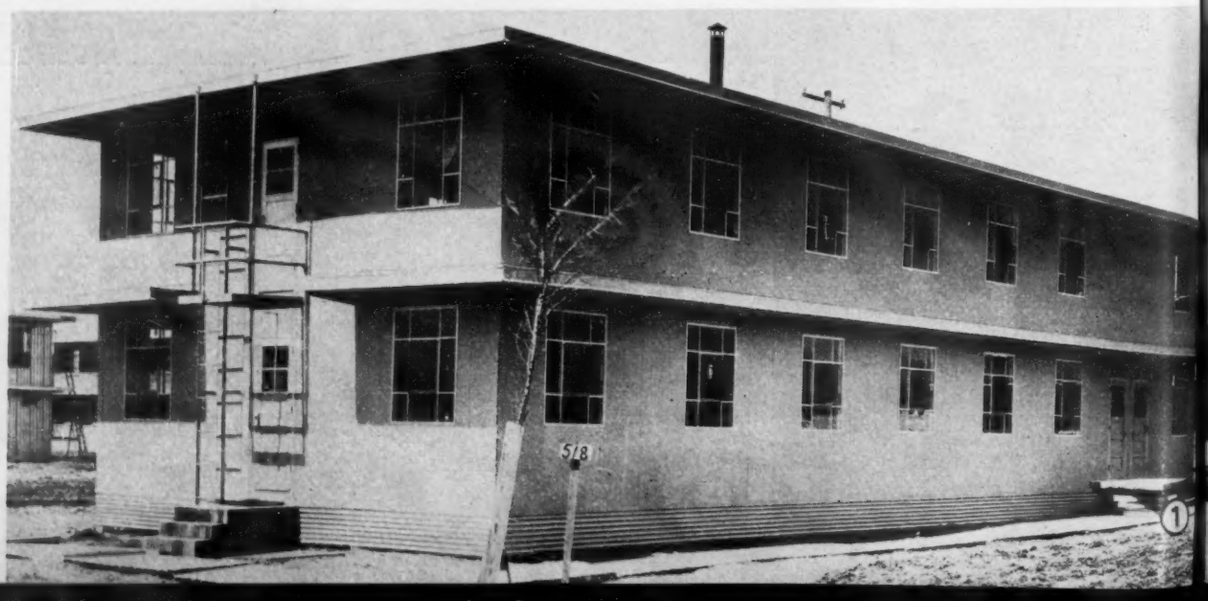
Unit sections can be cold-formed of strip and sheet steel to provide the basic structure of a home or building. Most of the experimental work has been done along this line and successful examples of this type of construction are to be seen in various parts of the country. These new units can be fabricated not only into low cost housing but also into the finest structure that can be designed.

Changes in steel requirements of industry from heavy to lighter sections and the change of material design to steel sheets has presented several problems to the steel industry. The use of lighter steel sheet sections has made it necessary to provide suitable protective coatings and provide protection by means of proper design, insulation and installation; thus guarding against condensation and deterioration as well as providing attractive finishes for the ultimate product.

The River Forest Garden apartments, River Forest, Ill., a group of 4-story buildings housing 281 family apartments, are constructed with light steel floors, ceilings, stairs, window sills and frames, as well as numerous other steel applications. This structure has proved exceedingly easy and economical to maintain. A saving of approximately 40 in. of wall construction is made in the height of these buildings because of the modern steel floor panel and ceiling construction.

The Bankers Life building, Des Moines, Iowa, with its steel interior wall panels enclosing a unique radiant type heating system, has been in service since 1940. It has been called "the building of the decade." Its structure, walls, ceilings, cabinets, shelving, desks and files are all built of steel. This building was inspected recently and it is interesting to note that no refinishing of the walls has been required; they are in excellent condition.

The Curtis Wright Corp. building, Buffalo, with its



Construction

Fig. 1—Steel sections for this 63-man barracks building at Camp Grant, Ill., were fabricated by the Globe-Wernicke Co., Cincinnati. Similar buildings were constructed by H. H. Robertson Co., Pittsburgh, at both Camp Grant and Camp Folk, La. These buildings have held up remarkably well

Fig. 2—As shown here, lightweight steel sections may be easily assembled. Workman is applying porcelain enameled panels on steel paneled walls in constructing Grass Valley Hospital near Oakland, Calif.

Fig. 3—This house in Colonial Village, Pittsburgh, has porcelain enameled entrance hood, shutters, corner boards, cornices and stack. Window frames, sash, sills, termite shields and door bucks also are steel

Fig. 4—This porcelain enameled all steel gasoline station is of a type now being adapted by many oil companies. Photo courtesy Gulf Oil Co.

"flexible interior" is another example. Steel interior wall and partition panels present a complete interior of steel which can be shifted to meet the needs of fast-moving business requirements.

The Acme Breweries building, San Francisco, has noncombustible steel floors which provide continuous conveniences in construction, outlets and maintenance. This is an example of modern construction which provides facilities for the everchanging electrical machine requirements of business today.

The Grass Valley Hospital building, Grass Valley, Calif., is an interesting example of complete steel construction, with structural frames, floors, ceilings and walls. This building has a complete panel exterior of porcelain enamel in color harmonizing with that of the surrounding landscape.

Many new types of lightweight steel construction are now coming into general use. They include steel joists, cold formed steel studs and shapes, steel floor panels, steel roof decks, steel windows, steel stairs, metal lath,

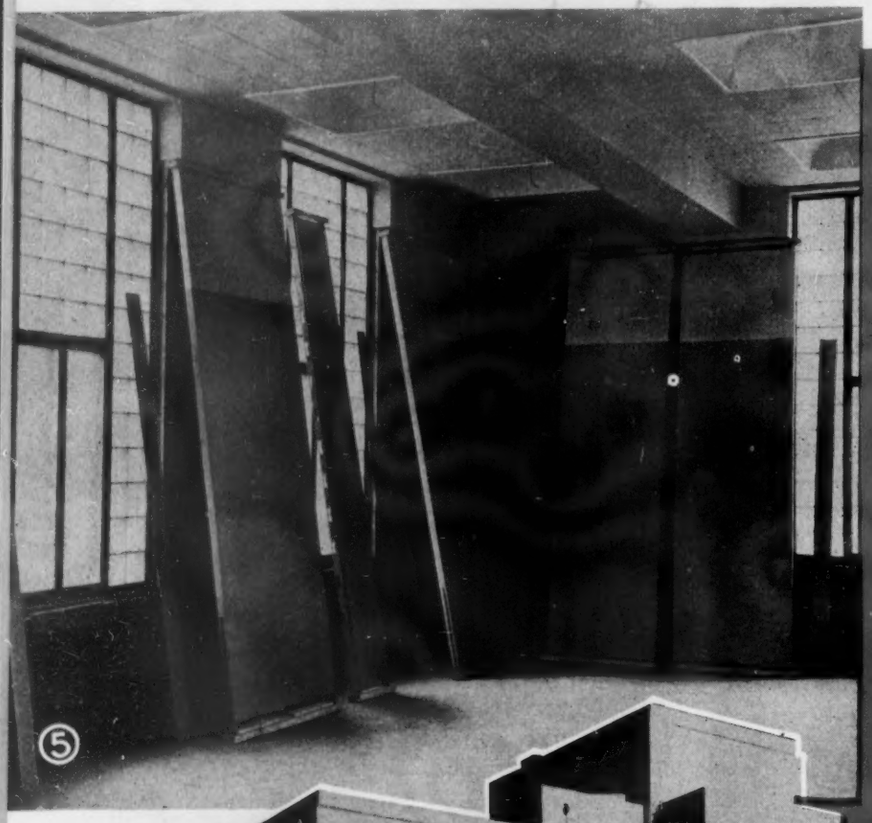
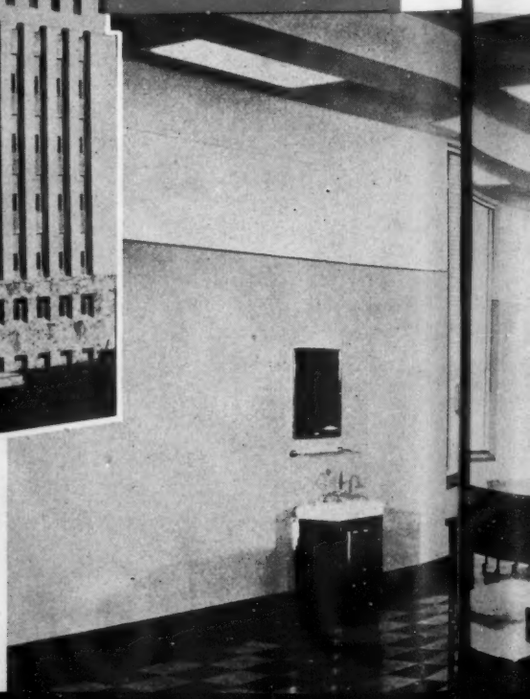


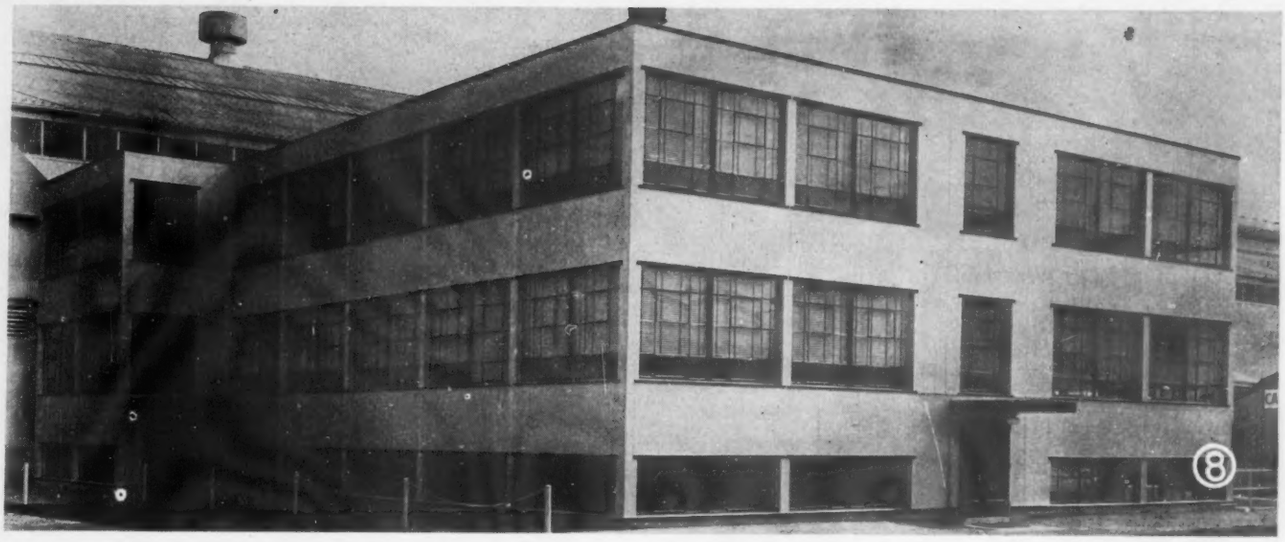
Fig. 5—Shown during process of installation in the Bankers Life building are steel panels fabricated by E. F. Hauserman Co. of Cleveland

Fig. 6—Bankers Life building, Des Moines, Iowa, uses interior steel panel construction enclosing a unique modern radiant type heating system

Fig. 7—Although the Bankers Life building has been in service since 1940, no refinishing of walls has been necessary. The building is air conditioned and uses a Precipitron for removing dust from the circulated air

Fig. 8—Carnegie-Illinois Steel Corp. constructed this steel office building at its Irvin, Pa. works. Of steel panel construction, this building also has steel floors, roof deck, stairs and other steel units





moldings, steel veneers and many other products. All of these are used because of proved advantages in service, durability, strength, incombustibility and economy.

Large numbers of small commercial buildings, gas and service stations, small restaurants, roadside stands of various types, ticket offices, bus terminals, store fronts, theaters and numerous other structures have been erected with exterior veneers of enameled steel, stainless steel, and porcelain enameled steel finishes in every color of the rainbow. These buildings require a minimum of expense and effort to maintain in a clean and attractive condition. It is expected that construction of this kind of building will expand.

Steel panel construction has been utilized extensively in industrial buildings. Uniform one-piece panel construction is easily erected, clean-cut and beautiful. It may be expected that construction methods employed in these buildings will influence the design of contemporary industrial buildings.

Steel roof construction has established its acceptance in building construction; millions of square feet of steel deck roofing have been used. Its own trade association has formulated design standards for the industry.

Hospitals and all types of educational buildings lend themselves particularly well to the use of porcelain enamel on steel. Blackboards of steel, unbreakable and easily cleaned, are now available and new motion picture screens for visual education have recently been developed to give approximately the same reflectivity as the screens in use. Stairways can be produced completely of steel, designed for any requirement. Every pound of combustible material eliminated from a building reduces the fire hazard, since interiors and equipment of steel will not burn.

The larger types of commercial buildings offer interesting opportunities. In addition to the basic framing requirements of multistoried buildings, steel floor panels, ceilings and sidewalls offer many new uses for steel. To keep the buildings modern and rentable requires sufficient conduit space for electrical wiring for the business machines, telephones, and communication systems. Unlimited facilities for these are provided in the newly designed steel floor systems.

The Mercantile National Bank building, Dallas, Texas, with its 40 stories of light steel floor panel construction, is an office building that can be kept constantly modern. Steel floor construction is remarkably clean and safe during the construction period.

Steel panel construction for walls and steel ceilings can be utilized to carry heating, air conditioning and utility systems. These steel surfaces may be had in any of the modern finishes and are easily cleaned and maintained.

With the increased use of steel veneers in various types of buildings, several architects and engineers have discussed the possibilities of approaching the problem of facing the exteriors of multi-storied buildings with steel panels. This development holds considerable interest because of the many potential advantages. Steel exteriors of commercial buildings will gain gradual recognition with each successful application. The early thirties saw stainless pilasters running up the exterior of multistoried buildings, such as the Empire State building in New York City. Other towers and spires have been completely covered with stainless steel. Spandrels of porcelain enamel on steel have been used on many modern buildings.

Ever since buildings utilized walls for structural bearing purposes, walls have been from twelve to eighteen or more inches thick. In modern curtain wall construction the

(*Please Turn to Page* 127)

Technical Advances in ELECTROPLATING

Speakers at American Electroplaters' Society meeting reveal new developments in electrotinning, electropolishing, adhesion, surface preparation and organic coatings. Weirton men report on engineering details of plating wide strip at high speed. Timby of Jones & Laughlin discusses alkaline baths

By ALLEN G. GRAY
Consulting Editor, STEEL

A WELL-ROUNDED agenda of technical papers in which were described many new developments in metal electroplating and related fields featured the 33rd annual convention of the American Electroplaters' Society at Pittsburgh, June 17-20.

Electrotinning of Wide Steel Strip at High Speed—The present conception of commercial electrotinning of steel strip is a resolution of the efforts of many divergent fields of scientific endeavor, in which steel processors have drawn heavily on the experience of the electrochemist and the electroplating field for information concerning surface preparation, plating and methods of evaluating the metal deposit. This was the version presented by S. S. Johnston and G. C. Jenison in describing the technical details of the development of electro tin plating of wide steel strip at high speed as carried out by the Weirton Steel Co., Weirton, W. Va.

However, the authors emphasized such progress could not have been attained without the accompanying advances made in the metallurgy of iron and steel, as well as improvements in both mechanical and electrical engineering and the general "know-how" based on practical experience by fabricators as well as producers of light-gage steel. The basic principle of continuous electroplating was visualized with the introduction of the first continuous hot mill in 1927. The next step was that of cold reduction of the resulting hot mill band which began 2 years later. These two basic changes in the processing of steel made possible the mechanical means of handling steel in the strip form and in widths and thicknesses suitable for tin plate.

Fig. 1—Flow sheet of acid electrotinning process

The basic design specifications which were laid down for the commercial Weirton line included the following: (1) Speed, 1000 ft/min; (2) maximum band width, 38 in.; (3) gage, 0.008 to 0.035-in.; (4) coating weight, 0.5 lb tin/base box at 225 amp/sq ft; (5) the uncoiling and recoiling reels should handle coils weighing up to 30,000 lb each.

Equipment was designed to perform the operations shown in the "flow sheet" in Fig. 1. In the electrolytic cleaner (Fig. 3) the cleaning is alternately cathodic and anodic. The strip passes between two sets of grids of the same polarity and then between another set of two grids of opposite polarity. The electrolyte, any of the commonly known alkaline cleaners, and the strip itself, complete the circuit without any electrical contacts. The grids which are laminations of sheet steel are each 42 in. long and two such cycles are carried out. Current density is about 100 to 150 amp/sq ft. Wringer rolls at the exit end of the tank return the excess dragout to the tank after which the strip is thoroughly scrubbed using high-pressure sprays aided by high-speed rotary tampico brushes bearing against the surface.

The strip then passes into the pickler, a conventional brick-lined steel tank 65 ft long and 3 ft deep. The strip is submerged under the acid level by two large diameter (24 in.) rubber covered rolls, one at each end. Acid strength, uninhibited, is varied from 4 to 8 per cent by weight of sulphuric acid according to the grade of steel being plated. Temperature is controlled by means of steam jets at 180 to 190°F. Wringer rolls at the exit end prevent excess carry-over and the strip is again scrubbed, as it was after alkaline cleaning.

After thorough wringing of the wash waters, the strip enters the first deck of the plater. The Du Pont Halogen tin plating bath is used. The plater, about 80 ft long, has three main decks. The bottom of the strip is plated in the first deck after which the direction of travel is reversed and the top of the strip plated in the second deck. After the top is plated, the strip goes to the third deck, and the direction of travel again reversed, the direction now being the orginal (Fig. 2). In each of the first two decks there are 12 plating cells, 24 in all, each cell being connected to a 5000 amp, 12 v generator. A 15,000 gal storage tank for electrolyte is under the first deck and pumps are continually supplying fresh electrolyte to each cell. Return lines allow the overflow from each cell to return by gravity to the storage tank. The cell

is about 12 in. deep and 6 ft long. (Fig. 4). The main anode support, connected to the positive side of the generator, rests across the bottom of the center of the cell. Auxiliary supports are placed at each end to keep the anodes parallel with the strip. The main support is a conductor (tin) while the others are rubber covered. The anodes, of pure tin, are 30 in. long and about 3 x 3 in. cross section. To increase anode area and reduce anode current density, they are cast with an offset in one side.

In continuing their description of some of the engineering features of the Weirton line design, it was stated that between each cell there is a contact roll, made of steel, for taking the current from the strip. For tight contact a rubber covered roll presses the strip against the contact roll and the current is taken off the roll by carbon brushes in a commutator at both ends. Both of these rolls are driven and synchronized with the speed of the strip to avoid any drag and subsequent scratching of the plated strip.

Solution level in the cell is maintained by sealing the exit end of the cell allowing it to overflow at the entry end. With about ⅛-in. clearance between the top of the cell body and the strip, solution is always between the anode and the strip provided there is a constant flow of solution to the cell. Since the line does not operate at a constant speed, the current flowing to the cells changes automatically with the line speed to produce a uniform coating at all times. The plated strip is sprayed by solution from the drag-out recovery tank and wrung, then it passes to the third deck and into the drag-out recovery tank. At the exit end of the drag-out tank, the strip is sprayed with water at the same volume as that going to the sprays after plating. The sprays are all adjusted to compensate evaporation loss from the main body of electrolyte and keep a constant volume.

While the matte finish produced in the plating operation has a pleasing appearance, the coating is soft and susceptible to marring by any mechanical handling. Experience, in general, has shown that corrosion resistance is enhanced if the coating is melted. To accomplish this, in the Weirton setup, the strip passes through a high-frequency inductive field. The frequency is 200,000 cycles at 17,000 v and the power input is electronically controlled so that the tin is just melted but not burned or over oxidized. The strip then passes into a quench tank to set the coating and then passes to the so-called "chemical treatment" tank.

In the chemical treating operation, according to the details given, the strip is made the cathode in an alkaline chromate solution at 10 to 40 amp/sq ft. Following this, there is a subsequent treatment with no current after which the strip is again thoroughly washed with condensate to eliminate all alkaline salts from the surface. It was stated that plate so treated will meet the requirements of can manufacturers with respect to adhesion of organic coatings.

To facilitate handling of the plate after it has been sheared into sheets, a thin film of oil is applied to the surface. This amount varies between 0.1 and 0.2 g per base box. Palm oil has long been the oil used in the hot dip tinning practice. However, cotton seed oil is easier to work and handle and is now almost in universal use on electrolytic plate. Air is blown through cottonseed oil to produce an oil-air fog which is introduced into a chamber through which the strip passes. The strip is then rewound into a plated coil. This coil then goes to a set of shears for cutting into sheets; inspection and bundling for shipment

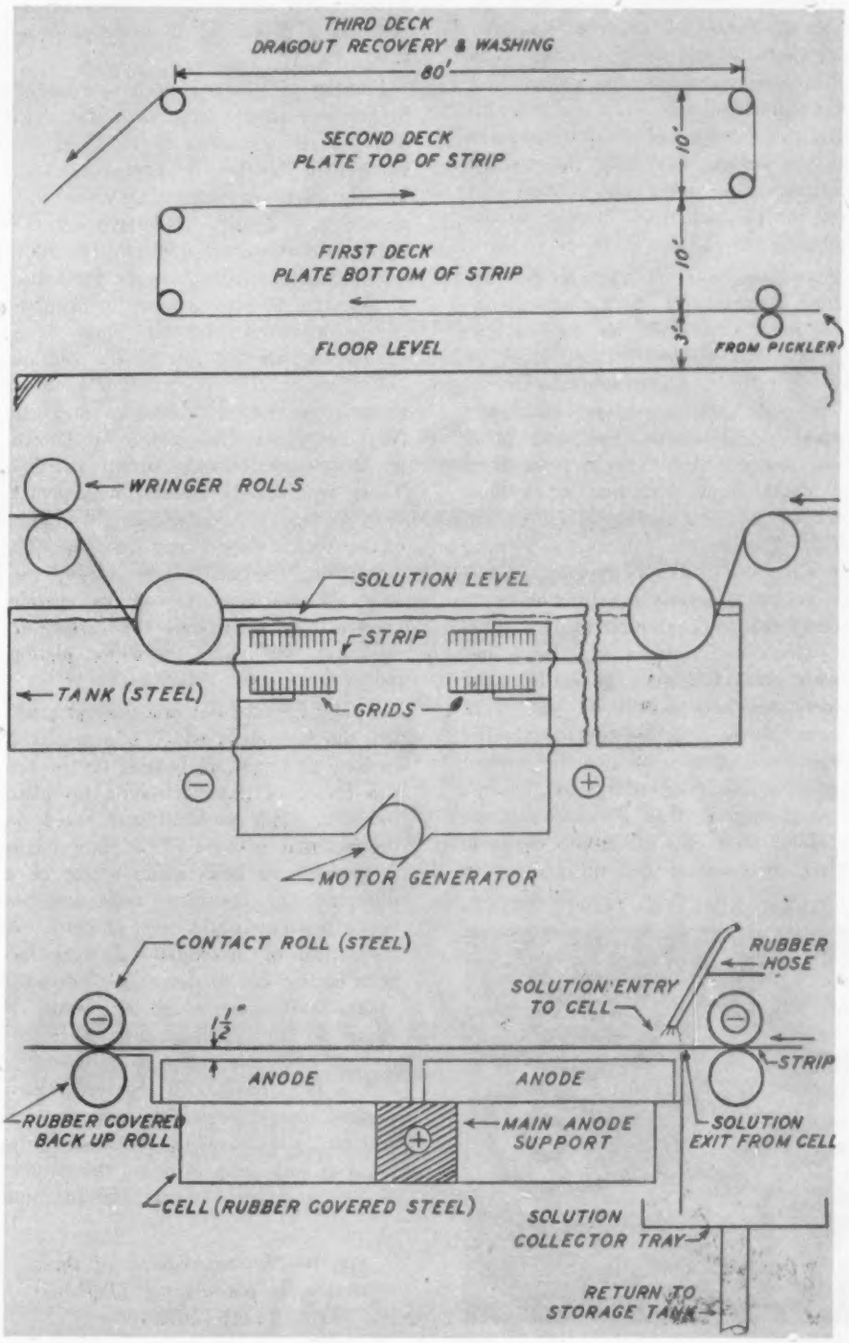


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Fig. 2—Schematic elevation view of plater

Fig. 3—Schematic view of electrolytic cleaner

Fig. 4—Layout scheme of plater cells

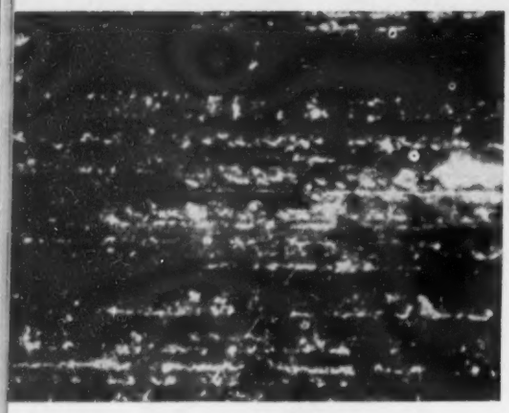

Fig. 5—Photomicrograph of plain, polished sheet steel (400X)

completes the operation on the manufacture of electrolytic tin plate at the Weirton plant.

Alkaline Electrotinning — According to T. G. Timby of Jones & Laughlin Steel Corp., two types of alkaline baths are in commercial use, the sodium and potassium solutions. The earliest investigational work and the first commercial application was with the sodium solution. The potassium solution entered the production of tin plate in the beginning of 1943.

According to Timby, the alkaline solutions, by reason of their chemical nature, require little in the way of special materials of construction; steel, in general suffices. The solutions themselves, which usually operate at lower current densities than the acid processes, are relatively simple since they are made from potassium or sodium stannate plus the corresponding caustic alkali. The sodium solution, as a rule, also contains sodium acetate. Solution control is largely a matter of maintaining that concentration of free caustic which accumulated experience has shown gives the most generally satisfactory operating conditions. It is, of course, highly desirable to maintain the tin content of the solution to prevent depletion, and according to Timby's work it appears that a caustic content of about 30 to 35 g/l is the desirable value, to maintain the tin content in the equilibrium range of 45 to 55 g/l at the operating temperature of 190 to 200°F.

Anode design in the alkaline solution has an important bearing on anode behavior. Timby listed the following as characteristic of an ideal anode arrangement: (1) Maintain a fairly uniform area during its useful life; (2) permit operating control of the filming operation; (3) give as uniform current distribution as possible over its entire area. This increases the permissible current density operating range; (4) give uniform coating distribution on the strip. Horizontal casting of anodes in an open top mold was recommended as the preferred method of anode preparation.

Filming of anodes, which is essential to the successful operation of the alkaline process, according to Timby is accomplished by briefly applying a relatively high current density to the anode; this density is known as the upper critical current density. The film, once established, continues to form and at the same time to dissolve in the plating solution. Accordingly, there is a current density for any given solution below which the rate of film solution exceeds the rate of formation and the film disappears. This density is known as the lower critical current density. These two density figures, which vary with solution composition, set the range within which plating may be done with any given alkaline solution. It, therefore, follows that a uniform current density distribution over the surface of the anode will permit the widest plating range.

Timby brought out one general problem the solution of which was predicted to have an important bearing on the entire future of the electrolytic tin plate industry. This problem was based on the fact that at times all tin plate manufacturers have been made aware of a difference in corrosion resistance between two comparable sets of plate. A great deal of investigational work has been carried out to determine the cause of this difference which apparently is related to the domain of surface chemistry. Up to now, according to Timby, certain facts have been observed which suggest that this variable corrosion resistance is due to intermittent occurrence of something in or on the surface of the steel base or possibly to some unrecognized surface condition of the steel base.

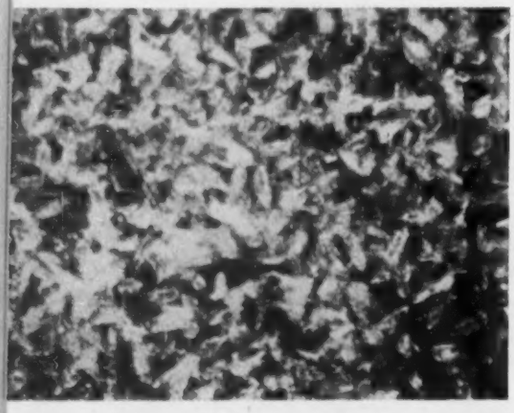

Fig. 6—Photomicrograph of sheet steel after phosphating (Parkerizing) (400X)

The following were presented as facts for evidence in the case: Plates of both good and of less satisfactory corrosion resistance have been produced so close together in point of time that it appears extremely unlikely that pickling and plating conditions could have materially changed in the elapsed time interval. Changes in corrosion resistance have also been noted on occasions by changing pickling and alkaline cleaning procedures. A variation in heat treatment from the conventional procedure has also been tried. Coils of plate have been split and both halves processed as usual except that one-half of the lot was normalized instead of receiving the conventional anneal. The normalized stock was by far, according to Timby, the better in corrosion resistance. It has also been found that continuous annealing effects an improvement. Thus it appears that the higher temperature involved in both of the above tends to remedy some condition with which the conventional anneal does not always cope.

Electropolishing—Its Commercial Aspect Today—Electropolishing is now a commercial process for surfacing, machining, or finishing metals, either to provide a brilliant surface appearance, or to achieve machining without cold working or heat effects, and the attendant distortions that accompany mechanical metal-finishing methods. This was the general concept given the platers on the present-day commercial status of Electropolishing by Dr. C. L. Faust, Battelle Memorial Institute, Columbus, O., a pioneer experimenter in the development of such processes.

The most outstanding advantage of electropolishing is the production of brilliant color having exceptionally attractive tone not heretofore seen on many metals in simple and in complicated shapes. This is accomplished by dissolution of metal from the surface of the work that is made anodic in acid (and occasionally alkaline) solutions. Metal is removed under highly polarized and pseudopassive conditions, which do not prevail in the simple, electrolytic cleaning treatments that were generally known to the prior art. Recessed surface area is polished as well as relief areas. This effect, along with the exceptional color tone that results, provide the outstanding advantages.

However, as pointed out by Faust, the same effect may react against the process in certain possible applications. Being electrolytic, it is dependent on the surface smoothness and on the physical and mechanical nature, and the "inherent cleanliness" of metal from any particular method of fabrication. Seams, dirt, slag,

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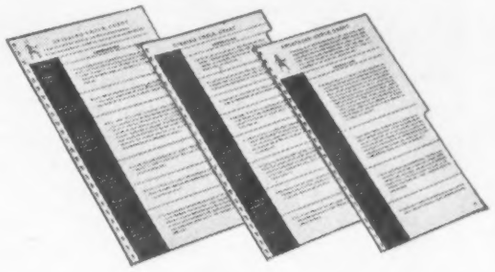

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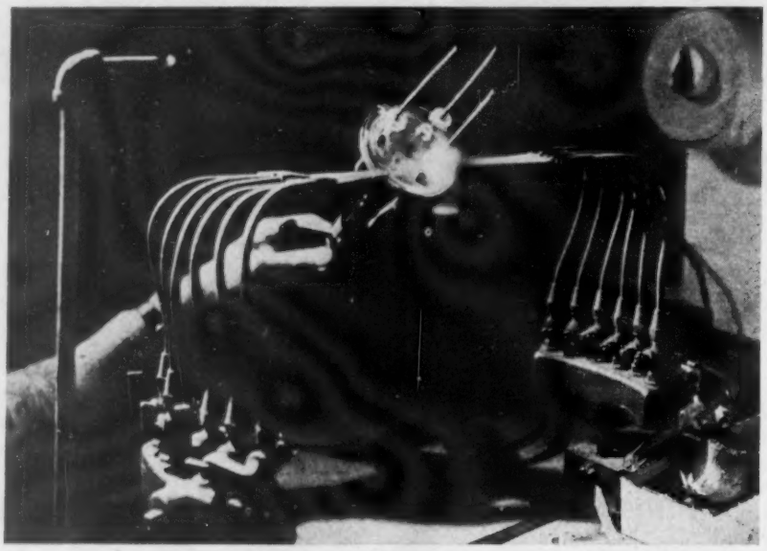

FUSING TRANSMITTING TUBE: Using oxygen-gas flame, glass beads fused into tungsten wire in a previous manufacturing step are shown here being sealed into openings in glass base of VT90 transmitting tube at the Brooklyn plant of Amperex Electronic Corp. This is delicate operation because excessive heat would spoil original seal between beads and tungsten, resulting in air leaks

and nonmetallic inclusions, deep rolling or drawing lines, and certain insoluble phases in alloys are uncovered and may or may not be removed.

At the present time, evaluation of practical applications of electropolishing generally originates from a desire to replace hand polishing and buffing. This attempt frequently fails because proper considerations have not gone into the thinking. One must recognize and immediately accept the fact that there is no "electrolytic wheel finish." Electropolishing methods do not have the cutting and burnishing action of wheels and tumbling barrels; so, it can never produce the same finish. In view of this, it is obvious that there are applications where mechanical polishing cannot be replaced by electropolishing. Suitability can be determined only on the basis of whether the results are acceptable in their own right. Electropolishing should never be judged on the basis of whether it duplicates a wheel finish.

According to Faust, many automatic and hand-operated machines now in use for different kinds of metal surfacing operations can be replaced or complemented by electropolishing. Among these are: Machining to exact size, removing of burrs from stamped, ground, punched, drilled edges etc; it might well be called electromachining, electrobuffing, electrodeburring, etc; new avenues in design are opened up and many processing operations can be simplified. Over 100 companies, both large and small are engaged either in pilot plant or production electropolishing or both in the U. S. A. Most of the installations are for decorative finishing, but some are solely for machining benefits realized from uniform metal removal without cold working effects and damage.

Faust emphasized the fact that the acceptance of defects in the base metal that retard applications of electropolishing will not always be necessary. It is well known that defects in the base metal and rough handling in the stamping drawing or casting departments are paid for by extra costs in the polishing department, one of the most expensive units in any plant. The cost saving that is possible by electropolishing permits fabrication with premium metals and under conditions of better die maintenance and forming practice. Expensive hand polishing can be largely, if not completely, eliminated. For best results by electropolishing stampings must be made from good quality clean metal in cold rolled sheet or strip from clean rolls providing essentially complete reduction of pickle pits and imprints from previous hot rolling stages.

Methods for Testing Adhesion of Electrodeposits—Probably the greatest secret to perfect bonding in electroplating is an absolutely "clean" base metal surface. This was the conclusion reached by Dr. A. L. Ferguson of the University of Michigan in describing the results of Research Project No. 3 on "The Adhesion of Electrodeposits" which is supported by the American Electroplaters' Society. The adhesion of electrodeposited metals to the base metal has always been of major concern to the electroplating industry. Its importance has increased rather than decreased with time and even more so during recent years since thick electrodeposits have come into increasing general use through such processes as building up of worn parts by iron, chromium and nickel plating and through the development of electrodeposited metals for bearings.

According to the modern concept of the structure of metals, continuing Dr. Ferguson's report, only atoms are present. This means that all the forces, including those at the surface which result in adhesion are atomic or chemical in nature. If the above analysis is correct, then the degree of adhesion for a given deposit and base metal becomes largely a matter of how intimate a contact can be made between atoms of deposited metal and the atoms of the base metal. It should be possible, theoretically, to make this contact so intimate that the force or bond between the deposited metal and base metals might be even greater than the forces between the atoms of deposited metal or atoms of base metal themselves, which are commonly called cohesive forces. Or, to put it differently, the tensile strength of the bond might be greater than the tensile strength of either the deposited or base metal.

It was pointed out by Dr. Ferguson that the bond strength manifested in any given case depends upon how close the atoms come to each other and that the strength decreases at an increasing higher rate with increase in distance apart, becoming practically zero when the distance is equal to a few molecular diameters. Probably the most familiar name given to the force involved in bringing about the bond between deposited and base metals is crystallizing force. The strongest possible bond should be, therefore, one in which the atoms of electrodeposited metal continue the same crystals as present in the surface of the base metal. Whether the continuation of such crystal growth ever takes place has been and still is a controversial subject, according to Dr. Ferguson. The results of Dr. Ferguson's work are published in AES Research Report, Serial No. I, and contains many general considerations on the nature of adhesion of electrodeposits as well as a correlated abstract of published methods for measuring degree of adhesion.

The Effect of Surface Preparation on the Durability of Organic Coatings—According to V. M. Darsey, Parker Rust-Proof Corp., research has proved that the application of an organic finish directly over base metal is an inferior solution for the corrosion problem. This sug-

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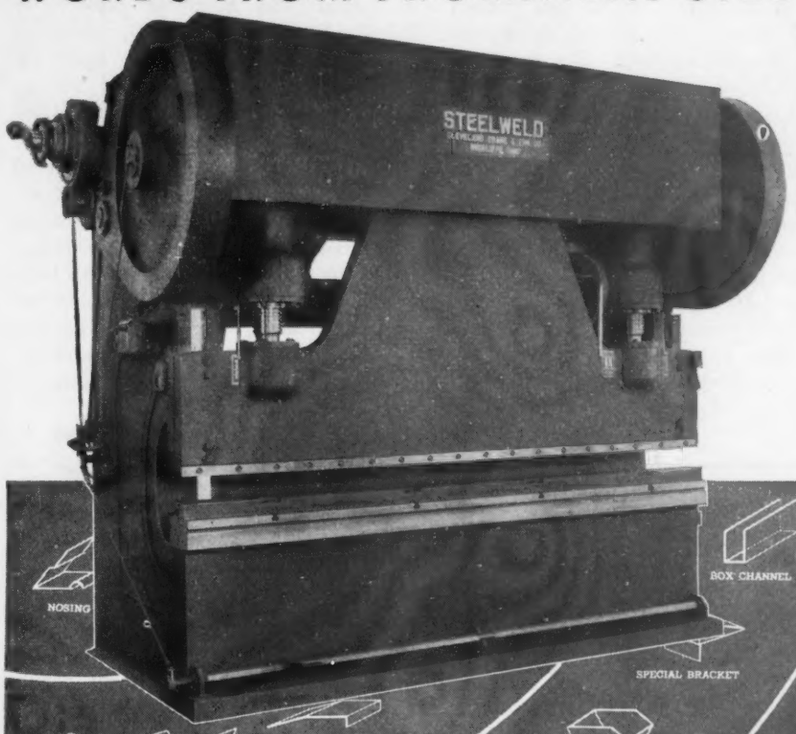

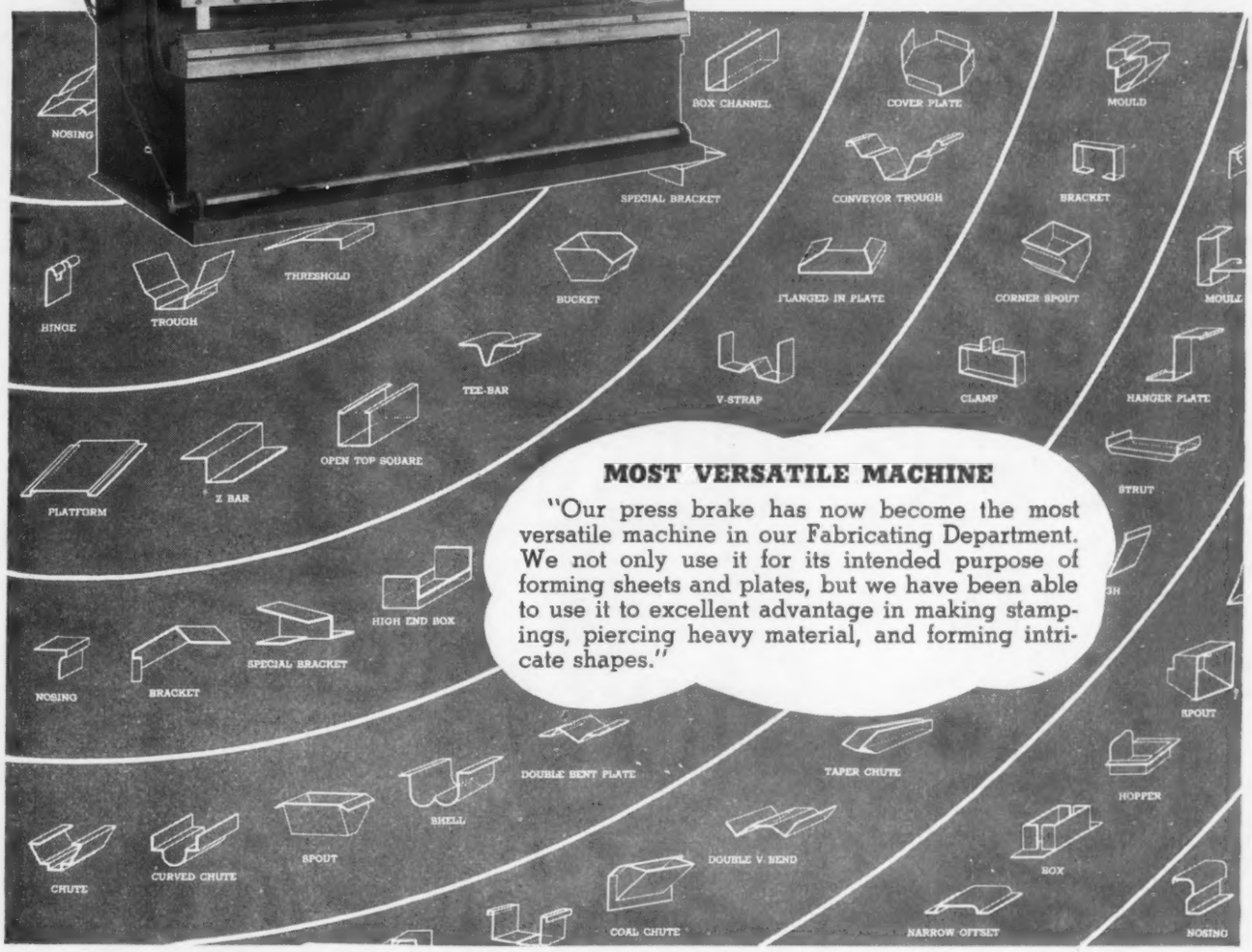

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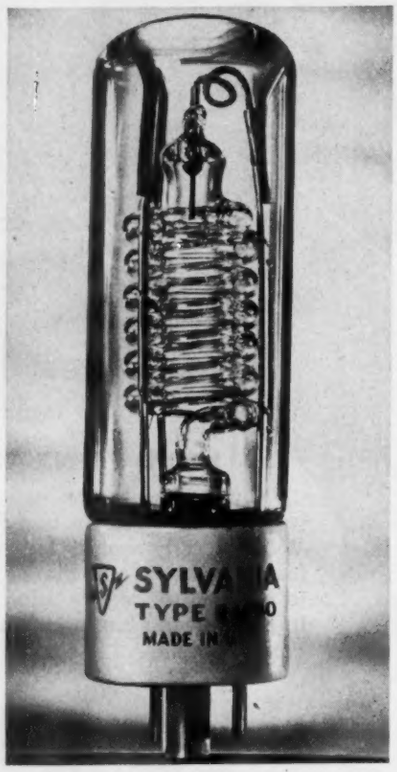
gests that the surface of the metal should be made as impervious to corrosion as possible prior to the application of any finish. This latter function is fulfilled by rustproofing, wherein phosphate coatings are widely used. Protective coatings produced by converting the surface of a metal into a chemical compound of exceedingly low solubility in the environment to which it is to be exposed are being increasingly used.

Application of organic paint finishes to steel serves two purposes, first to provide "eye appeal" and second to protect the steel against corrosion and ultimate failure from mechanical weakness induced by corrosion. The useful life of such a final finish, according to Darsey, is dependent on three things: (1) Prevention of corrosion beneath the paint film; (2) maintenance of adhesion of the film to the base; (3) durability of the organic finish itself. Within the past few years the use of phosphating in industry to produce surface conversion coatings useful as a base for lacquer or paint adhesion has increased many fold. Solutions for phosphating are marketed commercially under the names of Bonderizing and Parkerizing. The thickness of the standard phosphate coatings such as "Bonderizing" runs from 0.00005 to 0.0001-in. The thickness of the heavier films such as "Parkerizing" runs from 0.0001 to 0.0003-in. Both finishes generally give about 4 hours salt-fog resistance when tested without further treatment. Parkerizing, however, accompanied by an oiling operation can give 25 to 50 hours salt-spray corrosion resistance and both Bonderizing and Parkerizing can give 100 to 200 hours salt-spray corrosion resistance when treated with the proper organic finish.

Phosphating has come to be a short-time process. According to Darsey, many of the new developments in this field have been directed to this end. For Bonderizing in strip mills the time can be as short as 7 sec and in job shops about 2 min. When phosphate coatings are to be considered for an application one of the primary considerations should be surface preparation. The general consensus of opinion is that acid pickling should be avoided if possible.

Phosphating of zinc and cadmium plated surfaces has come more in the foreground in the past few years. A corrosion resistant and paint holding zinc coated sheet has been developed and is being marketed by the various steel companies under their own trade names. The deposition of the zinc and the phosphating is accomplished by continuously passing the properly cleaned strip steel or sheets through an acid-type zinc plating bath and immediately followed by phosphating and rinsing. The availability of finished sheets should increase as more steel and equipment is made available. The improved paint holding quality of the phosphate surface and the added protection against corrosion afforded by the zinc layer beneath the paint and phosphate coating assures long service life for such finished parts. Due to the thin and adherent nature of the electrodeposited zinc coating, sheets can be drawn and articles fabricated therefrom can be subsequently painted, since the preformed phosphate coating serves as a satisfactory paint base. Shipment and storage of such sheets without rusting makes them especially suitable for many uses.



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Natural and Synthetic Rubber in Electroplating Field—H. C. Klien, of the Goodrich Rubber Co., in discussing linings for corrosion resistant plating room equipment predicted that natural crude rubber will again become the most prevalently used lining material because it is easier to handle and install than lining made from synthetics. According to Klein, it requires considerably more time to install the synthetic materials in view of the fact that the synthetic rubbers lack natural building tack and often require preshrinking before they are applied to the vessel to be lined.

Thermoplastic linings are applied directly to the steel walls of the containers by using proper adhesives and vulcanization of the lining after it has been adhered to the container is not required. Before the war these materials were strictly special purpose linings and were used only where rubber linings would not handle the corrosives involved, such as oxidizing acid solutions, for example, nitric and chromic acids. Principal advantages of thermoplastic linings, such as Koroseal, in electroplating tanks are the ease in making field repairs and the extremely low absorption of plating solutions.

Dr. F. C. Mathers of Indiana University, Director of Research Project No. 1 on "Stripping of Copper From Various Base Metals", recommended for this purpose a practical method involving a sodium polysulfide-cyanide combination strip. According to Dr. Mathers the sodium polysulfide solution can be prepared by heating a solution containing approximately 13 oz/gal caustic soda and 20 oz/gal sulphur. This stripping solution produces a heavy surface precipitate of copper sulphide which can be largely washed off in water before the subsequent cyanide treatment. This may result in increased economy over other methods. The solution is maintained by adding sulphur equivalent to that removed as copper sulphide and sufficient caustic soda and sulphur to replace that lost by dragout.

Full details of the results on this aggressive research program will be available in the Official Proceedings of the 33rd Annual Convention of the American Electroplaters' Society.

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Rated light output of 20 and 40 w white and daylight fluorescent lamps was increased recently by Westinghouse Lamp Division, Bloomfield, N. J. Initial lumens of 20 w white have been increased from 860 to 920, 20 w daylight from 760 to 800, 40 w white from 2100 to 2320, and 40 w daylight from 1880 to 1920.

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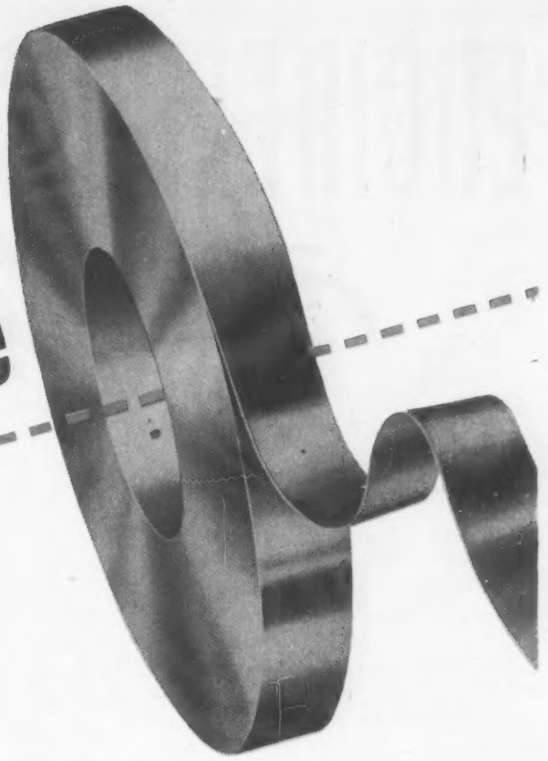

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alloy strip — — — — — — — — — gauges thin as .001

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Depending on the grade, here are some of the advantages over carbon steels —

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High tensile values are obtainable in certain alloy Thinsteel grades.

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CMP PRECISION COLD ROLLED **STRIP STEEL**

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ENGINEERING NEWS *at a glance*

ONE method of handling cut or corroded rolls which are causing production lags, according to Youngstown Welding & Engineering Co. engineers, is to pressure weld covers of monel, inconel, nickel, stainless steel or any corrosive resisting weldable material on them. Method of welding shrinks the covers on new or old cores so the shells will fit tightly serving in many instances, for years without grinding and other maintenance, yet providing a smooth, clean surface, free from pits and corrosion. According to the Youngstown company, over 1000 rolls welded in this fashion established remarkable records for long service at low cost.

LABELS affixed to metals, in containers or tanks, now can be used to determine when dampness or humidity approaches the point where corrosion forms. According to Eljay Enterprises of New York, which is offering the labels for commercial use, the small sensitized product changes its color from a brilliant blue-green to pink with the change in humidity. Labels are packaged in strip or roll form upon a protective backing from which they can be removed, one at a time, and attached to any surface. Also, they can be used over and over again.

DEVELOPMENTS in the molding technique of mycalex, ceramic-like plastic produced by General Electric Co., may easily quadruple number of peacetime applications for this material in the next five years, according to the company's Chemical Department at Pittsfield, Mass. Before the war, the product in molded form was used almost entirely for electronic equipment due to the limited number of shapes which could be produced. Now, ability to injection mold the material into a variety of shapes opens the way for many industrial applications. Previously, the company reported, many prospective users of the product who wished to take advantage of its unusual properties shied away from it because of its high cost.

ELECTRICAL conductivity of copper castings often varies through a wide range, and may be as low as 70 to 75 per cent. The lack of uniformity proved a serious handicap to manufacturers of resistance welding equipment. Now, the handicap should be largely eliminated by the development of Ampcoloy 90, a product guaranteed to have a minimum electrical conductivity of 90 per cent, according to its maker, Ampco Metal Inc. The Milwaukee firm says use of the development in resistance welding transformers makes it possible to increase the secondary ampere output considerably with less heating.

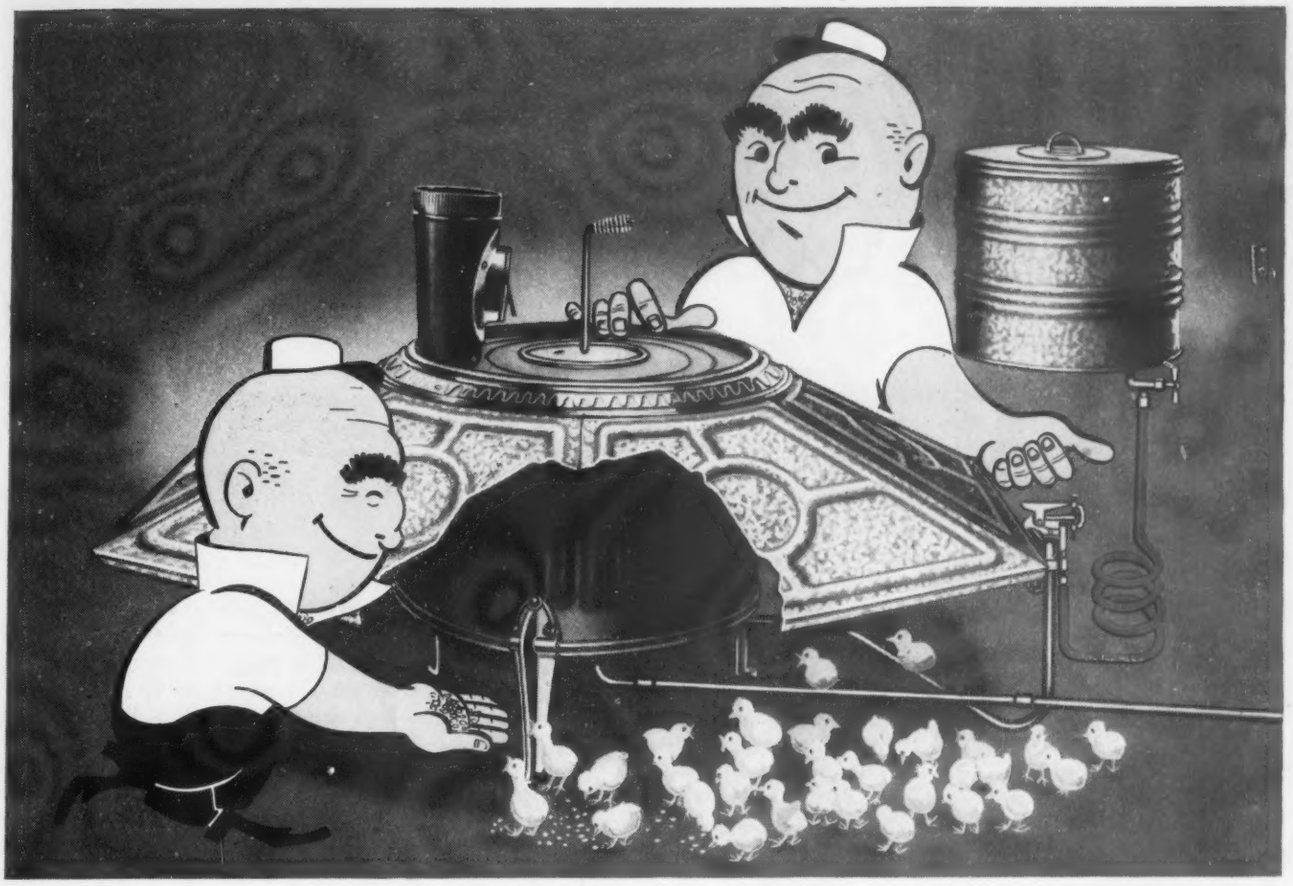
IN Hillside, N. J., it was learned, Edgecomb Steel Co. is distributing Liquid Envelope, a peelable protective plastic film, to metalworking industries in the New York, New Jersey and New England areas. The product is a development of Better Finishes & Coatings Inc. for application to steel and nonferrous sheet, prior to cutting and fabricating operations. According to Edgecomb, the material, in a film as thin as 0.002-in. provides protection against scratches, draw and die marks, and other surface scars incidental to cutting, forming, cupping and drawing operations. It can be used also as a masking material when finishing metal.

NEW national society to aid those interested in statistical quality control was recently established, with Edward M. Schrock of Pittsburgh Quality Control Society as president, according to "Industrial Standardization," publication of the American Standards Association. Headquarters for the new organization will be in New York. Intention of the society is to give particular attention to needs of those engaged in manufacture and inspection, and to publish material that will help quality control people sell and apply control methods.

LATEST developments in industrial air conditioning, many of them growing from war experience, are to be displayed at the All-Industry Refrigeration and Air Conditioning Exposition scheduled to be held at Cleveland Public Auditorium Oct. 29 to Nov. 1, the Refrigeration Equipment Manufacturers Association reported recently. More and more plants are installing air conditioning, not only for the sake of personnel comfort, but also to assist maufacturing processes, the association said. It cited as an example the unit installed in the Woodside, Long Island plant of Bulova Watch Co., which protects delicate machinery and precision tools from dirt, dust and grit. Here, the air conditioner controls humidity in the air, greatly reducing the danger of corrosion due to excess moisture.

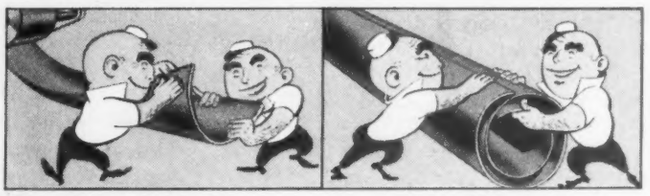
PRECISION metallization of glass can be applied to production of precision resistors for pulse circuits and many other purposes, the Department of Commerce reported recently in revealing the research work done by the Polytechnic Institute of Brooklyn during the war under contract with the Office of Scientific Research. To produce resistors of metallized glass, it was revealed, a metallic film is either baked on the glass or evaporated on the glass in high vacuum. If the power carried is not excessive, resistance change will be less than 1 per cent. It was found that power loading resistors can be made with baked-on films to handle up to 1000 watts. The films are stable if the operating temperature does not exceed 150° C.

AMERICAN Paint Co. reports from Philadelphia that the product it developed for cleaning and coating metal surfaces to make them rust resistant, and to provide a suitable base for protective finishes, unfortunately, was placed in the Deoxidine group—even though it did not possess rust-removing properties—one of the outstanding characteristics of Deoxidines. Therefore, the name 210 B Deoxidine applied to the product was changed to Duridine 210 B, to eliminate the confusion which has resulted. The development does not remove rust, but prevents it from developing under new paint, also preventing rust from spreading under painted metals exposed to scratches or other abrasions, company officials explained.



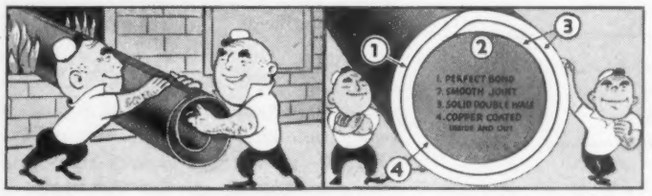
For men who won't buy a "Pig in a Poke"

BUNDYWELD TUBING SUPERIORITY STEMS FROM AN EXCLUSIVE AND UNIQUE MANUFACTURING PROCESS



1 Bundyweld Tubing is made by a process entirely different from that used in making other tubing. A single strip of copper-coated S.A.E. 1010 steel is continuously rolled twice laterally . . .

2 . . . into tubular form. Walls of uniform thickness and concentricity are assured by the use of close tolerance cold rolled strip. This double rolled strip passes through a furnace where the . . .



3 . . . copper coating fuses and alloys with the double steel walls. After brazing and cooling, it becomes a solid double wall steel tube, copper brazed throughout 360° of wall contact . . .

4 . . . copper coated inside and out, free from scale, closely held to dimensions. Hard or annealed in standard sizes up to ⅝" O.D. Special sizes cold drawn. Also in Monel, nickel and nickel alloys.

OUR DESIGN engineers like to meet manufacturers who insist on knowing what they're buying—*before they buy it.* Here's why: Our men can *prove* that Bundyweld Tubing is *superior . . . different.*

In hundreds of exacting applications, Bundyweld is providing outstanding service to modern industry—condensers for refrigerators . . . flash tubes, pilot tubes and supply lines for gas ranges . . . fuel, lubrication and hydraulic lines for motor vehicles . . . even in such little known applications as chicken brooders. In any case, Bundyweld users can count on:

- **great resistance to vibration fatigue**
- **high bursting point in pressure applications**
- **great strength**
- **easy fabrication**
- **low cost**

No matter what use you make of tubing, the odds are with Bundyweld for giving you better service at lower cost. Write today. *Bundy Tubing Company, Detroit 13, Michigan.*

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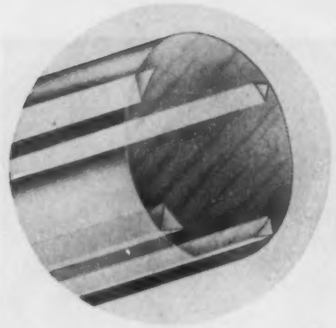


Flux in four channels on outside of wire melts at temperature 250 degrees lower than solder to eliminate pre-fluxing. Mild composition prevents discoloration of metal and resultant cleaning

New CORED WIRE SOLDER

IT is interesting to note, that with all the advantages attributed to cored wire solder, it is, in a sense, a paradox of soldering procedure. We know that in order to solder properly, a flux must be employed to clean the surfaces and to remove all traces of oxidation thus insuring full contact between the metals and the solder. Obviously, the flux should be applied first. However, when using cored wire solder, the flux located in the center of the wire is not released until the surrounding solder has melted. A resulting mixture of solder and flux forms on the work. Consequently, there is no true pre-fluxing action.

Users of conventional cored wire solder have at times noticed the presence of flux voids or "skip-spots." The operator is thus confronted with the possibility that the particular segment of solder he is using might not contain the required amount of flux.

National Lead Co., New York, studied these soldering problems and consequently developed a new cored wire solder designed to flow the flux on the work first and eliminate skip-spots.

The pre-fluxing action is accomplished by the location of the flux. Instead of a center core, Fluxrite, as it is identified, contains the flux in four channels equally spaced around the periphery of the wire, see illustration. It can be seen that upon application of heat, the flux being on the outside, will liquefy first and flow on to the work before the solder has fully melted. In this way, a proper foundation is laid for the solder to act upon and efficiency and fast action are achieved.

Skip-spots are overcome largely by the method of manufacture and partly by the flux arrangement. In manufacturing the solder, the flux-loading operation is repeated a number of times. Thus if a gap occurs during the early flux-loading operations, the subsequent operations supply the necessary flux to fill it in. The flow of flux is further assured by the safety factor of multiple channels.

The solder is produced in diameters as low as 0.008-in. and thorough tests show that its performance in this small size is as efficient as in the larger sizes, including all standard wire solder gages, as well as special sizes and shapes such as rings, ovals, etc.

Except in the case of special applications, a neutral flux is used. Harsher fluxes are incorporated by the addition of such agents as zinc chloride and oleic acid, the neutral flux acting as a base. All fluxes which are now used in cored solders may be used in this product with the exception of liquid acids. As an alternative, solid acid fluxes can be utilized.

By varying the number of channels, or by enlarging or decreasing the width and depth of the channels, almost any specified percentage of flux can be obtained. The normal minimum percentage of flux for cored solder is 1.50 per cent by weight. National Lead has manufactured this product with a flux percentage as low as 0.25 per cent.

Typical of applications is a production problem solved for Titeflex Inc., Newark, N. J. This company specializes in the manufacture of pressure-tight flexible metal hose made of brass, bronze and copper.

Titeflex flexible tubing is formed by a patented method from specially annealed brass strip, and the wire solder is incorporated into the flutes during the forming operation. The formed hose then passes through a V-shaped trough heated by electrical elements to a temperature properly controlled to flow the solder. The hose is then cut off into 40-ft lengths, after which bronze wire braid is woven over the flexible inner-core.

The difficulties encountered were twofold. First, due to its position and the lack of free space surrounding it, the solder was confined to a limited area and could not spread sufficiently to allow the flux always to come in contact with the brass. An effort was made to rectify this situation by using a solder with an extremely harsh flux. The results proved satisfactory so far as the soldering action itself was concerned, but a rather bad discoloration of the brass was caused by the flux, necessitating an additional operation of washing.

By R. G. KOCSIS
National Lead Co.
New York

The second problem was a somewhat unusual effect of skip-spots. A skip-spot is caused by a pocket of air within the solder, and normally prevents proper fluxing. In this case, with the solder having so little opportunity to spread, the skip-spot was retained for a comparatively long interval. During this interval the heat of the melting solder would heat the air within the skip-spot. The increasing pressure within the pocket finally would produce a miniature explosion and scatter the solder quite considerably. Naturally the resulting joint was not satisfactory.

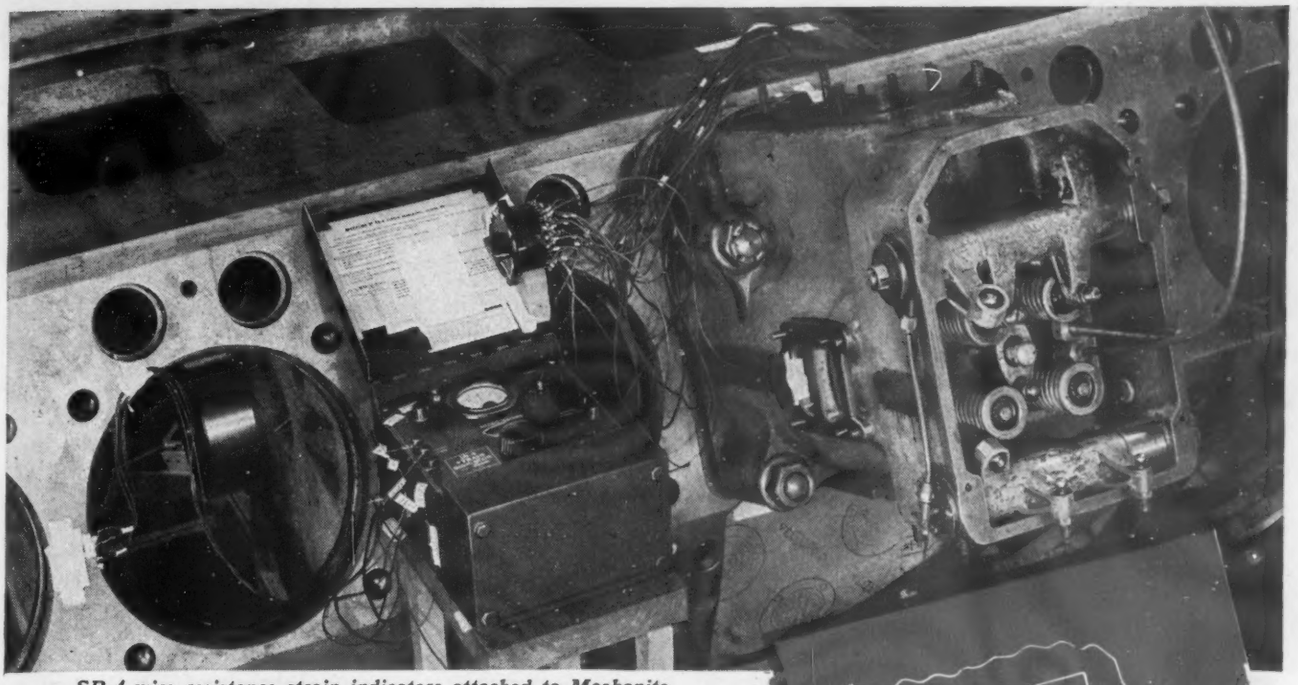
These production snags were directly responsible for a high scrap figure. Each section of hose was subjected to a rigid high pressure air test while submerged in a trough of water A single pin hole in a 40-ft length was sufficient cause for rejection.

National Lead's engineers were invited to study the problem, and upon doing so, recommended Fluxrite. Extensive trials proved it to be the right answer.

As the flux is on the outside and melts at 250° F lower than the solder, the desired fluxing action was readily obtained. In addition, the flux of this solder was 66 per cent less harsh than had been previously used, caused no discoloration, and eliminated the costly cleansing operation. The absence of skip-spots did away with the explosive action previously noted. Scrap lost was reduced.

American Transformer Co., also of Newark, N. J., uses electronic heaters to solder hermetically sealed transformers. Formerly they used a ring of conventional cored wire solder. However, by this method, the surfaces to be joined oxidized from the heat applied before the flux could work its way to the metal, and highly unsatisfactory joints resulted. Coating the surfaces with a flux of alcohol and resin prior to inserting the solder was then tried. This method produced adequate joints but required an additional cleaning operation as the flux formed a heavy residue. In addition, the amount of flux applied required very rigid control, thus slowing up the operation.

Again, the new cored wire solder was tried, and again it lived up to its name. The pre-fluxing operation was completely eliminated as the flux on the outside of the wire melted and coated the surfaces before oxidation set in. The cleaning operation also was done away with, as the heavy residue formerly experienced was no longer in evidence.

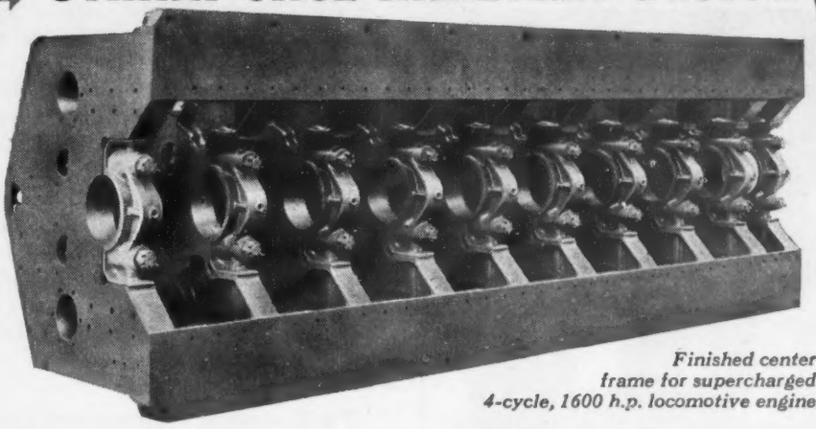


SR-4 wire resistance strain indicators attached to Meehanite center frame for Cooper-Bessemer Diesel engine.

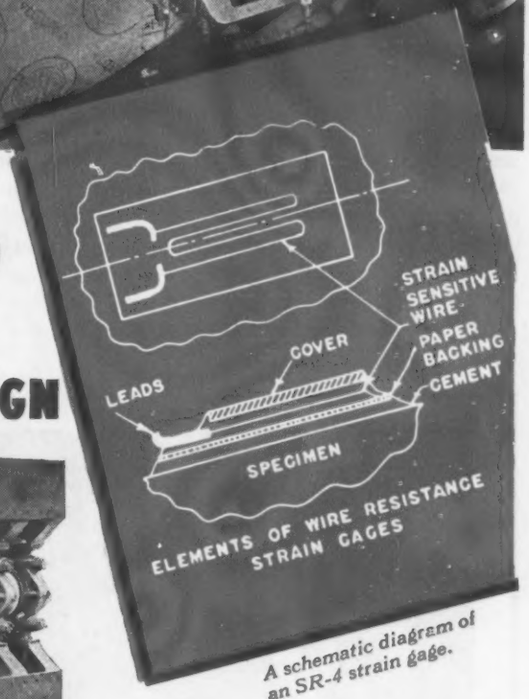
STAMINA DOUBLY ASSURED

➡ MEEHANITE CASTINGS

➡ STRAIN GAGE ANALYZED DESIGN



Finished center frame for supercharged 4-cycle, 1600 h.p. locomotive engine



A schematic diagram of an SR-4 strain gage.

FOR YEARS Meehanite Castings have contributed their better mechanical properties to power engines and other products made by The Cooper-Bessemer Corporation, Mt. Vernon, Ohio. Today increased advantage can be taken of the mechanical characteristics of Meehanite through improved design as directed by stress analysis.

The use of the wire strain gage as a guide in arriving at the best casting design has given the designing engineer a useful working tool. Data provided by this equipment permits maximum design, resulting in placing and correctly proportioning material in a manner calculated to provide greatest resistance to imposed stresses.

Thus actual stresses imposed by operating loads to which the casting will be subjected, can be applied and the resulting strain recorded by wire resistance gages. Stress raisers can be located in this manner and their magnitude actually determined.

This particular study revealed the presence of a stress raiser. By increasing one radius from ¼" to ½", it was possible to reduce the stress from 8900 pounds per square inch to 4740 pounds per square inch.

In this way the superior inherent properties available in Meehanite Castings can be applied to achieve maximum efficiency in production and fabrication.

All this is in keeping with Meehanite's continued progressive development through research and investigation.

MEEHANITE

PERSHING SQUARE BUILDING, NEW ROCHELLE, N. Y.

Wet Belt Machining

(*Continued from Page* 93)

position each abrasive particle assumes during application. This controlled distribution on the belt surface increases the cutting action and, at the same time, provides a finer and more uniform finish. The process attracts the grits to the backing in such a manner that the sharpest ends are up, while the broad base of the abrasive is embedded in ithe backing. Perfect rigidity of the individual grits results, with a minimum danger of grits breaking loose.

Each particle of abrasive on the belt acts as a cutter, and with the belt traveling 3000 surface feet per minute one can readily understand how millions of grits, or cutters, remove stock at extremely high speeds. Each cutter removes chips that resemble chips from a shaper. Few cutters are as tough and hard as the grits used on the modern abrasive belt. Abrasive grits employed are usually silicon carbide and aluminum oxide, the latter available only in fine grit sizes.

Platen: The belt travels vertically over a top and bottom pulley, passing over a hardened steel platen on the way down. A standard platen is 9 in. wide by 12 in. high. It is against this platen that the working operation is performed. The work is pressed against the moving belt and the surfacing or grinding or stock removal operation takes place. A hardened, perfectly flat platen is necessary when holding to close tolerance or when establishing flat surfaces and/or parallelism. A resilient platen, with plenty of "give" is indicated when flatness is not an issue, when convex surfaces are to be ground or a high polish is desired. For some work, a graphite-asbestos covering over a cast iron platen, with an additional cushioning of felt, cork or other material insures adequate resiliency. Grinding of convex surfaces on a resilient platen is made possible because the belt will follow the contours of the platen and the work as the piece is pressed against the belt.

Platens are reversible, and wear can be evenly distributed over a large area, obviating frequent regrinding. The coolant lubricates the back of the belt as it glides over the platen and snuggles the belt perfectly flat against the platen, thus insuring accurate flat surfacing.

Coolants: Care must be exercised regarding the proper ratio of water to soluble oil, as an excessive quantity of oil tends to gum the belt and adversely affects the cutting power of the belt. Just enough oil to prevent rust is recommended. Soluble oil in ratio of one part oil to 40 parts of water is generally accepted by wet belt users. The coolant is applied to the belt and the work by a spray nozzle located directly over the work. As a result, the work is constantly cool and distortion, warping and discoloration are avoided. Burrs are unknown in wet belt machining, as the metal does not heat enough to "drag" over the work. Another spray nozzle, inside of the machine, flushes the belt and prevents "loading" of the belt; hence, the belt provides a clean, sharp surface at all times for maximum cutting efficiency. Accuracy does not suffer because of a grit-clogged or chip-smeared belt.

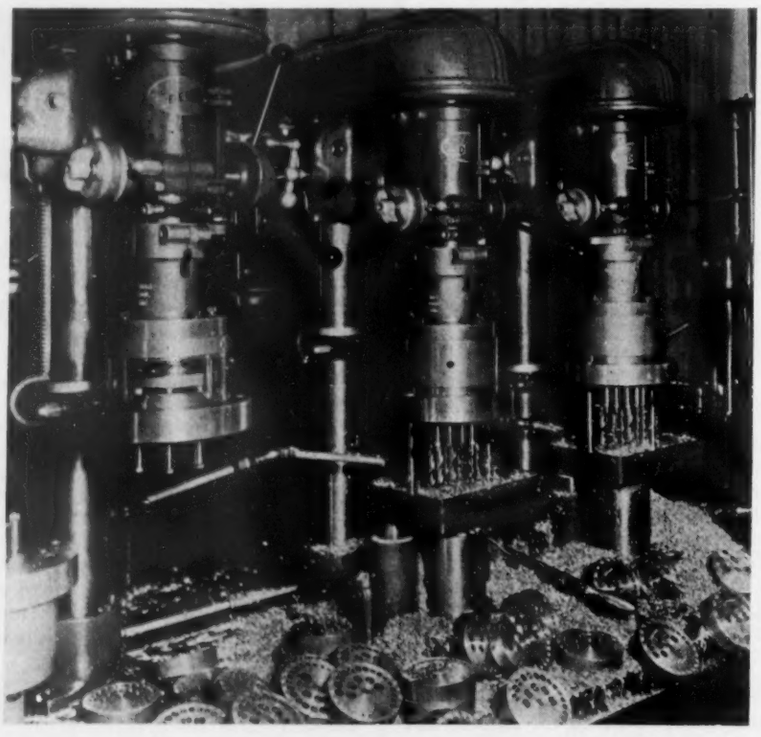
The constant coolness of the work permits free hand surfacing and machining and grinding of pieces formerly held in place on other machines by expensive jigs and fixtures. Free hand operation is particularly adaptable to flat surfacing where a close tolerance is not required, and on operations like chamfering, rounding, squaring, removing flash, sprues, etc.

Area Surfacing and Stock Removal: An important advantage of wet belt machining is the permissibility of grinding a large surface at one pass. Surfacing 52 sq in. is not uncommon. The exact area is governed by the material and shape of the work piece; however, no definite statements can be advanced regarding area sizes. Generally speaking, aluminum and other nonferrous metals permit larger areas to be surfaced than ferrous metals or heat treated steel.

Wet belt machining is particularly adapted to surfacing parts with dispersed or interrupted areas. It may or may not be advantageous to grind a large solid area of a given size, but if this area is divided into bosses or pads and if both are of the same total area, both are surfaced with equal speed.

Fig. 2 shows wet belt machining employed at the Albert Specialty Co., Chicago. An angular bronze manganese casting is being surfaced. The surfacing operation is part of the general stock removal operation. It may be interesting to note some production figures. Previous method allowed ⅛-in. stock for removal by milling. Now, by using a 3/32-in. liner on the patterns, only 1/32-in. stock is left, ample for satisfactory clean-up on both sides. Aside from the material saved, skilled labor time was saved at the rate of 6 2/3 hours per 100 castings.

In contrast to solid area surfacing, note the surfacing of a dispersed area at the Bell and Howell Co., Chicago, as shown in Fig. 3. All precision and rough sur-



DRILLING DRILL STANDS: Shown are drillheads manufactured by Zagar Tool Inc., Cleveland, drilling stands designed to hold drills in 32 sizes from 1/16 to 1/2-in. All 32 holes are drilled on two standard 17 in. Delta drill presses with these multiple-spindle heads having 3/4-in. minimum center distance. Drillheads have collet type drill chucks and anti-friction bearings

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These intricate shapes, unusual cuttings and formings in annealed or tempered spring steel are just a few of the many products that can be fabricated from GENSCO Warehouse steel. Call on GENSCO for assistance, and steel that permits smooth, trouble-free production.

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NEW SCULLY-JONES *Segment-Type** WORK REST BLADES will save you money because (1) *a damaged blade is no longer a lost blade,* and (2) only the individual *damaged segment* needs to be replaced.

New Segment SLOTS (an exclusive feature) are self-clearing and so designed that metal chips and grit are quickly carried away by the circulation of the coolant. Thus, with slots constantly free of accumulation, chips do not collect to mar the work being ground.

This *Segment-Type** Design makes it possible to use a harder, longer-wearing grade of carbide.

The cost of Scully-Jones reconditioning service on this *Segment-Type** Blade is but a fraction of the cost of a new blade.

Write for prices and delivery on this long-wearing, improved type of Work Rest Blade for Centerless Grinders.

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Refer to the Scully-Jones Catalog showing over 500 types and sizes of cutting tools, collet chucks, boring equipment, centers, etc.

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facing work performed by this maker of movie equipment is accomplished with the aid of wet belt machines.

It must not be inferred, from the foregoing, that the wet belt machining method is efficient only on large areas. Referring back to Fig. 1, some of the parts illustrated are small compared to the parts being surfaced in Figs. 2 and 3. Other small items, buttons, emblems, nuts and bolts, can be ground and surfaced as efficiently on wet belt machines as on previously used equipment and, in many instances, faster.

Automatic Feed Table: A major requirement of platen grinding, is the need for mechanical work pressure into the belt for maximum cutting efficiency. This alleviates operator fatigue. Pressure must be applied evenly and over the entire belt area and, on all but the softest materials, low speed with adequate pressure will usually provide better results than high speeds and inadequate pressure. In grinding soft material, hand pressure may be applied, provided close parallelism is not desired by the operator.

With the automatic feed table, perfected by the Porter-Cable Machine Co., a pressure of 450 lb can be brought to bear on the belt. This is maximum, not work pressure.

This mechanical means of applying pressure permits the removal of stock in excess of what could be removed by hand pressure. The table is equipped with a hydraulic control, regulating the rate of feed of the work into the belt. A micrometer stop disengages the feed when the desired amount of stock has been removed. The table slides from its stationary position in front of the belt to the right, at which loading and unloading of the work takes place. By means of the automatic feed table, close tolerances are maintained on large production runs. All average shop tolerances are easily held up to 0.001-in. Some users report closer tolerances, but such close tolerances are dependent upon the skill of the users.

On standard tables a T slot is provided to engage angle gages and other simple fixtures which need be nothing more than holding devices to hold the work in place during the operations. In Fig. 4 is shown a close up view of the table.

Fixtures: The belt travels in one direction and at the same speed over the entire work area, hence, the amount of stock removed by each one of the thousands of grits (cutters) poses no problem of strain. Consequently, fixtures are not usually required on general area surfacing operations. If used, they are of simple design and inexpensive.

Figs. 5 and 6 illustrate a fixture used to machine the boss of a cast-aluminum handle for an electric Speedmatic saw. Note the utter simplicity of the holding device, a simple window latch. The operation is performed with the aid of automatic feed table, with the casting resting on pins.

Production figures tell an interesting story: By the old method set-up time was ¼-hour with a production rate of 18 per hour. With wet belt machining, set-up time was reduced to 1/10-hour, and machining ⅛-in. of stock, resulted in a production rate of 60 pieces per hour. The pattern was finally changed to allow only 3/32-in. stock removal. Production rose to 150 pieces per hour with considerable savings in material.

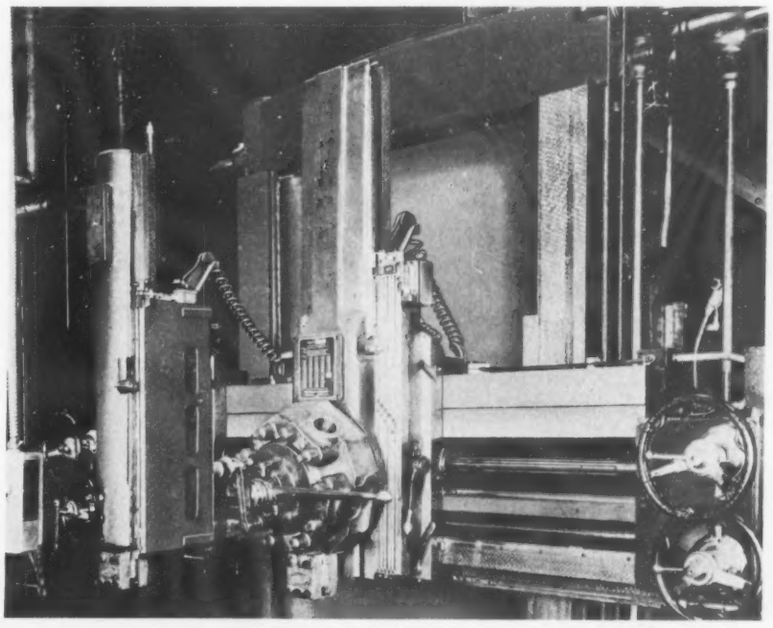
Not all jigs and fixtures are of simple design and easy to fabricate. The value of wet belt machining often depends upon the adroitness with which the tool engineer furnishes holding devices to support the work during the cutting operation.

Designing Work Holding Devices: Fixtures with a key for location on the table should be designed so that the finish plane of the work is 1⅜ in. from the near edge of the key. For holding work on the automatic table, simple and less costly devices may be used. This simplicity makes the table and the operation of the holding devices almost foolproof and alleviates possibilities of operator carelessness during the process.

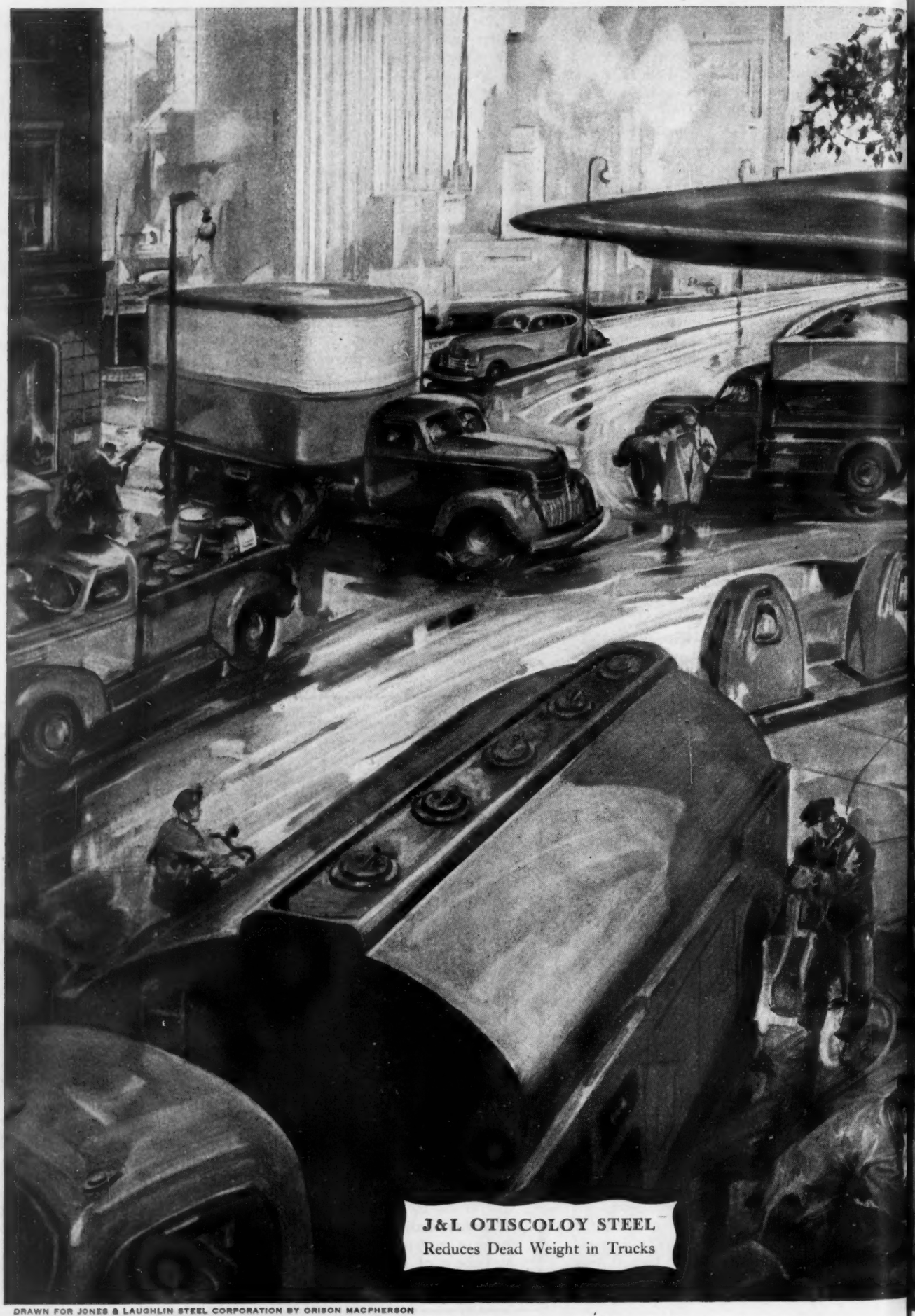
It is desirable to support the work as close to the belt as possible. Disks and washers have a tendency to turn during the grinding operation, which must be avoided. Yet, while this should be guarded against in general fixture design, it might prove valuable in instances where a round, convex surfaced button is to be ground. Generally, two pins supporting the bottom edge, as in a V block, and a spring clip bearing down on top, will usually prevent turning and spinning of washers and disks.

Belt grinding operations are usually very fast, many under 10 sec and some under 5 sec for the actual grinding. This puts a premium on quick loading and unloading. With the aid of simple fixtures, table time on wet belt machining is reduced. Where extreme flatness is required, especially on small light pieces, it is frequently necessary to hold them firmly so that they cannot flick a fraction of a thousandth of an inch from their true plane during grinding. Butt-jointed belts are helpful under such circumstances, but not always essential.

The general design of the fixture is entrusted to the tool engineer who thus controls the productivity of the machines. The complete absence of guide posts and previous experience with wet belt machines will test his dexterity and skill to the utmost.



RETRACTING CORDS: Shown is a Bullard 54 in. cut master vertical turret lathe equipped with two Koiled Kords developed for heavy industrial use by Kellogg Switchboard & Supply Co., Chicago. Oil-resistant neoprene cords here connect permanently positioned solenoids with microswitches mounted on carriage. By stretching and retracting according to movement of machine, danger of operational interference caused by tangling or looping is eliminated



DRAWN FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MACPHERSON

TRUCKS THAT SERVE YOU DAILY CARRY MORE PAYLOAD—LESS DEAD WEIGHT BECAUSE OF J&L OTISCOLOY STEEL

There is a throbbing, pulsating note in the economy of our life today that has become steadily stronger and faster. It is the cadence of the motor truck serving us faithfully and efficiently while we work, while we play, even while we sleep. Motor transport today has more than five million vehicles in service.

A few years ago 15,000 miles of service a year for a truck was outstanding. Today 100,000 miles is commonplace. To meet the demands for greater service, new designs and better materials have been developed. Many truck designers and builders of today are constructing their truck bodies of J&L Otiscoloy high-tensile steel to reduce deadweight and increase payloads. They find that Otiscoloy sheets with 40 percent higher yield strength than ordinary steel can be used to form lighter truck bodies without sacrificing ruggedness.

Motor truck manufacturers also find they can fashion special structural members from Otiscoloy sheets and plates to further increase the strength and reduce the weight of their trucks. They have found the greater strength of Otiscoloy and its increased resistance to corrosion and abrasion reduce the wear and tear of hard service and cut maintenance costs appreciably. In anticipating demands for even greater service, they are including Otiscoloy in their plans for better, more efficient trucks—trucks that will serve all our daily needs faster and with greater safety.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA

J&L STEEL

STRONGER, CONTROLLED QUALITY STEELS

OVER-THE-ROAD

New trucks will be lighter but stronger, more durable. They will transport increased payload for a given gross weight, also operate at lower cost and require less repair. Better load distribution, better balance and handling will be possible, much of it due to use of high-tensile steels, such as J&L Otiscoloy, which has high yield strength, 40 percent greater than ordinary steel.

Defensive driving, which means being prepared for any emergency, is theme of truck operators in intensive safety program to train drivers in safest method of handling big trucks and trailers.

Refrigerators on wheels are the big trucks handling cargoes of meats, frozen foods, butter, candy, confections, cheese, fruits, vegetables and many other commodities requiring refrigerated service to prevent losses in temperatures up to 130 degrees crossing the American desert. Many big refrigerated trucks are built of high-tensile J&L Otiscoloy steel, which makes for lighter design and resists corrosion.

Lighter trailer bodies with greater strength and increased resistance to atmospheric corrosion are being constructed of cold rolled Otiscoloy sheets by a Detroit machining and stamping company for a manufacturer who uses high tensile steels exclusively in his trailers.

Big trucks help make steel in the Jones & Laughlin mines and plants. Gigantic six and eight wheel "off-the-highway" vehicles are used to haul iron ore up steep grades in J&L mines in Minnesota, Michigan and Adirondack region of New York. Other types are used in mills to haul away waste slag over special private highways. Local deliveries between mills and customers and emergency deliveries from warehouses are performed by fleets of J&L trucks. Bodies and frames of these and other trucks retard corrosion, can haul greater payloads when made of Otiscoloy steel.

18,000 telephone trucks operate in this country, more than were produced in first 7 years of truck industry's existence.

For Otiscoloy booklet (illustrated), giving technical information of this weight-saving J&L steel, write Publicity Manager, Jones & Laughlin Steel Corporation, Pittsburgh.

If you need assistance in selection and use of steels and steel products, contact nearest J&L District Sales Office or write: Publicity Manager, Jones & Laughlin Steel Corporation, Pittsburgh 30, Pa. J&L manufactures a full line of products from its own raw materials. Principal products are: **Hot & Cold Finished Carbon Steels; Otiscoloy & Jalloy (hi-tensile steels); Hot & Cold Rolled Strip & Sheet; Tubular, Wire and Tin Mill Products; Precisionbilt Wire Rope; Steel Barrels & Containers.**

Sulphite Treated Steels

(*Concluded from Page 97*)

ing. With sufficient manganese present there is substantially no difference in the physical properties in plain carbon steels between one with a sulphur content as low as 0.03 per cent and the other with a sulphur content as high as 0.12 per cent. Nevertheless, there still remains a general opinion that sulphur is always harmful to steel and should be kept as low as possible, which opinion has been handed down to us by generations of steelmakers who were unable to refine steel as we do today."

Several months ago we sent a bar of sulphite treated 8640 to one of the leading research organizations in the Middle West for investigation. Excerpts of their report are:

Chemistry (As Determined By Investigator)

Carbon	0.38-0.39 per cent
Manganese	0.96
Sulphur	0.046
Silicon	0.31
Chromium	0.50
Nickel	0.41
Molybdenum	0.20

"No embrittlement was found in Izod impact specimens broken at minus 65° F; hardenability curve for this steel (based on average of three determinations) fell on the low side but well within the range specified by the AISI and SAE for A-8640-H and A-8740-H steels; number and size of inclusions were no greater than usually found in aircraft steel, and sulphur prints showed no evidence of excessive segregation." In other words, sulphite treated 8640, by their tests, met the usual acceptance tests for aircraft alloy steel.

To carry out this investigation a little deeper we consulted Battelle's handbook "Prevention of the Failure of Metals Under Repeated Stress", which they prepared for the Bureau of Aeronautics, Navy Department. In appendix 17, page 177, after discussing the effect of inclusions and directional properties, Battelle sums up as follows: "The effect of inclusions on endurance follows along lines similar to the effect of other notches, as indicated in Fig. 93. The effect, even in the harder steels, is notable only when an inclusion is at the surface of a rotating beam or in a highly stressed area of an axially loaded specimen. There is a natural tendency toward ascribing any fatigue failure to inclusions, if, on metallographic examination, one can find an inclusion anywhere in the piece, no matter how far from the nucleus of failure. Huge slag stringers on the surface are detrimental, highly so in hard steels, but the tiny inclusions usually present in even well-made steels will only have about the same effect as a surface scratch on the same dimensions, i.e., as an ordinary ground surface."

Since this seems to indicate that the effects of inclusions are mechanical, that is, that they act as stress raisers much the same as a notch, we believe the following micrographs will be interesting. The first, Fig. 1, is a picture at X 500, as are all the micrographs shown, of sulphite treated 8640 which had been reported to us as "dirty". It will be noted that the steel is almost inclusion free except for the sulphides and that the sulphides are small and thin. Actually their size appears to be about 0.0008 x 0.00006-in. To compare this inclusion size with non-resulphurized A-8640, Fig. 2 is included. The inclusions in this steel are essentially the same size and character as those in the sulphite treated sample, though a little fewer in number.

We then ground the sulphite treated specimen on an ordinary disk grinder and photographed it, Fig. 3. Note how prominent the grinding scratches are as compared to the inclusions in Fig. 1. Fig. 4 is still the same sample after wet polishing it with No. 400 Alundum grit on a cloth wheel. These two ground steel pictures probably represent the coarse and fine grinding limits for anything less than mirror polish.

Since the references cited refer to the usual sulphurized steels—they were written before the introduction of the sulphide process—pictures of the ordinary resulphurized steels might be of value. Fig. 5 is a micrograph of C-117, sulphur about 0.10 per cent. It shows what we consider a very good sulphide arrangement for machining but compared to sulphite treated 8640, Fig. 1, the inclusions look exceptionally large. Actually they measure 0.0025 x 0.0003-in. Of interest also is the association of silicates with the sulphides, a condition unusual in sulphite alloys.

Fig. 6 shows an average bessemer B-1113 steel. Again note the size of the inclusions. Fig. 7 is a micrograph of C-1117 steel which was reported as bad machining. Note the glassy sharp cornered inclusion which not only in our opinion would hurt machinability but also if located near a highly stressed surface would provide a very sharp notch to start a fatigue failure. It is dangerous to make assumptions in predicting fatigue values. However, we would expect that the rather soft rounded sulphides would be much less potent as notches than such sharp angled, hard inclusions. Fig. 8 is a micrograph of a well made C-1144 steel. Again note the size of the inclusions as compared to the sulphite treated alloy, and the association with silicates.

Whatever the actual effect of these sulphides is, and we feel from the above that it is very slight if indeed it is significant at all, we think any metallurgist worried about inclusions can take comfort from this paragraph of Battelle's handbook, page 75: "By and large, the effect of inclusions as inherent stress raisers in steel is very minor indeed compared to the imposed stress raisers in the form of poor fillets, oil holes, and discontinuities of that character which are so common in neglectful design. Between inclusions and keyways, the comparison is as the mote and the beam!"

NEW PRODUCTS

Uniseal—Paste of uniform consistency, flows smoothly to form ribbon gaskets, and blends readily with cut gasket material. Parker Appliance Co., Cleveland.

Plastic Safety Siphon—Designed for safe and efficient handling of acid. Alden Speare's Sons Co., 156 Sixth street, Cambridge, Mass.

Tape Tonic—Mixture is a white, translucent appearing fluid which makes the gummed tape soft and pliable. Diagraph-Bradley Stencil Machine Corp., St. Louis.

Bisector—Accurately locates anchor position and indicates amount of pull. W. C. Dillon & Co. Inc. 5410 West Harrison street, Chicago 44.

Cotoid—Formula based on synthetic resin—a thermo-plastic in which its low water absorption and inert properties inhibit corrosion. Lithgow Corp., 333 West 40th place, Chicago 9.

Pressure-Compensating Packing Rings—Known as Palmetto Pyramid Packing, available in molded ring form, made to exact dimensions. Greene, Tweed & Co., Bronx boulevard at 238th street, New York 66.

Umbrella Plug—Fits into center of hollow type rivets and furnishes cap completely covering the head of the rivet. Cherry Rivet Co., 231 Winston street, Los Angeles.

Oil-base Enamel—Spred-Luster properties of which permit the use of water as a thinning medium. Glidden Co., Cleveland.

No Fog—A cream in collapsible tubes, can be applied to both sides of lenses or glass, and polished to an invisible finish. Carhoff Co., 12114 Woodland avenue, Cleveland.

Pipe Joint Compound—Pipetite-Stik in stick form, will withstand gasoline, oil, butane, propane, etc. Lake Chemical Co., 607 North Western avenue, Chicago 12.

Ground Thread Flat Rolling Dies—For use on Waterbury Farrell, Manville, National Bolt Maker, and National Electric Jr., and Sr. Thread Rolling Machines. Jones & Lamson Machine Co., Springfield, Vt.

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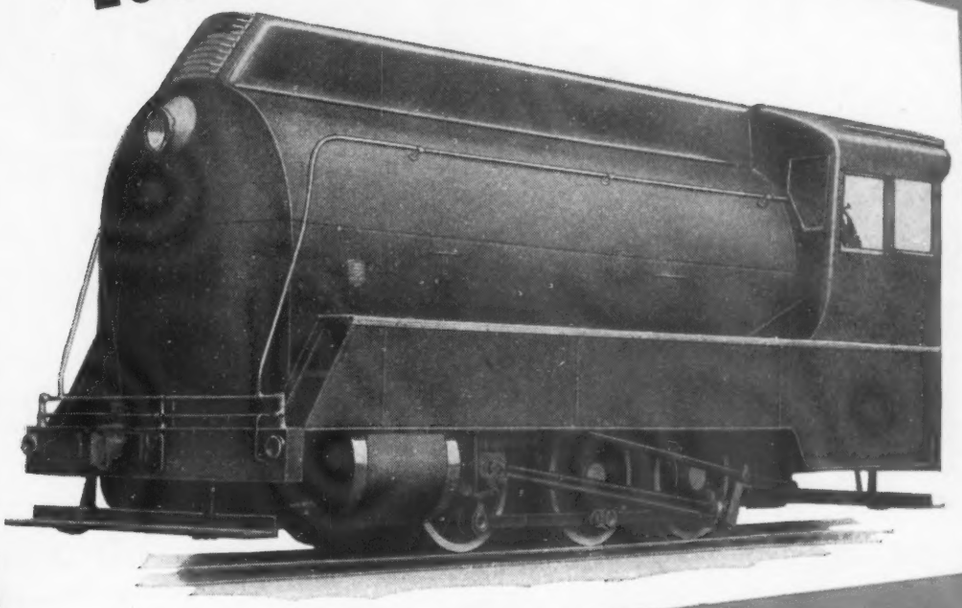

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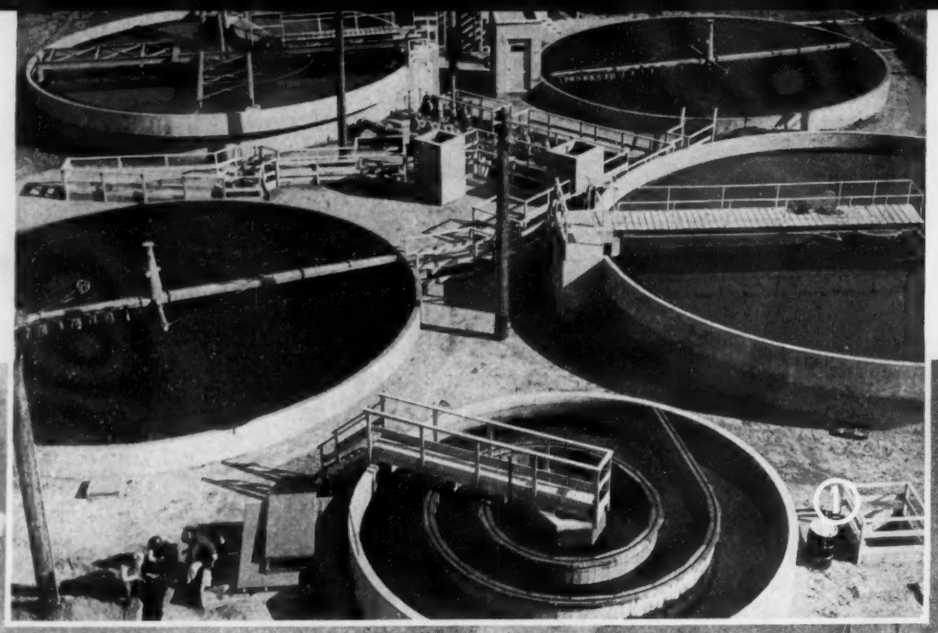
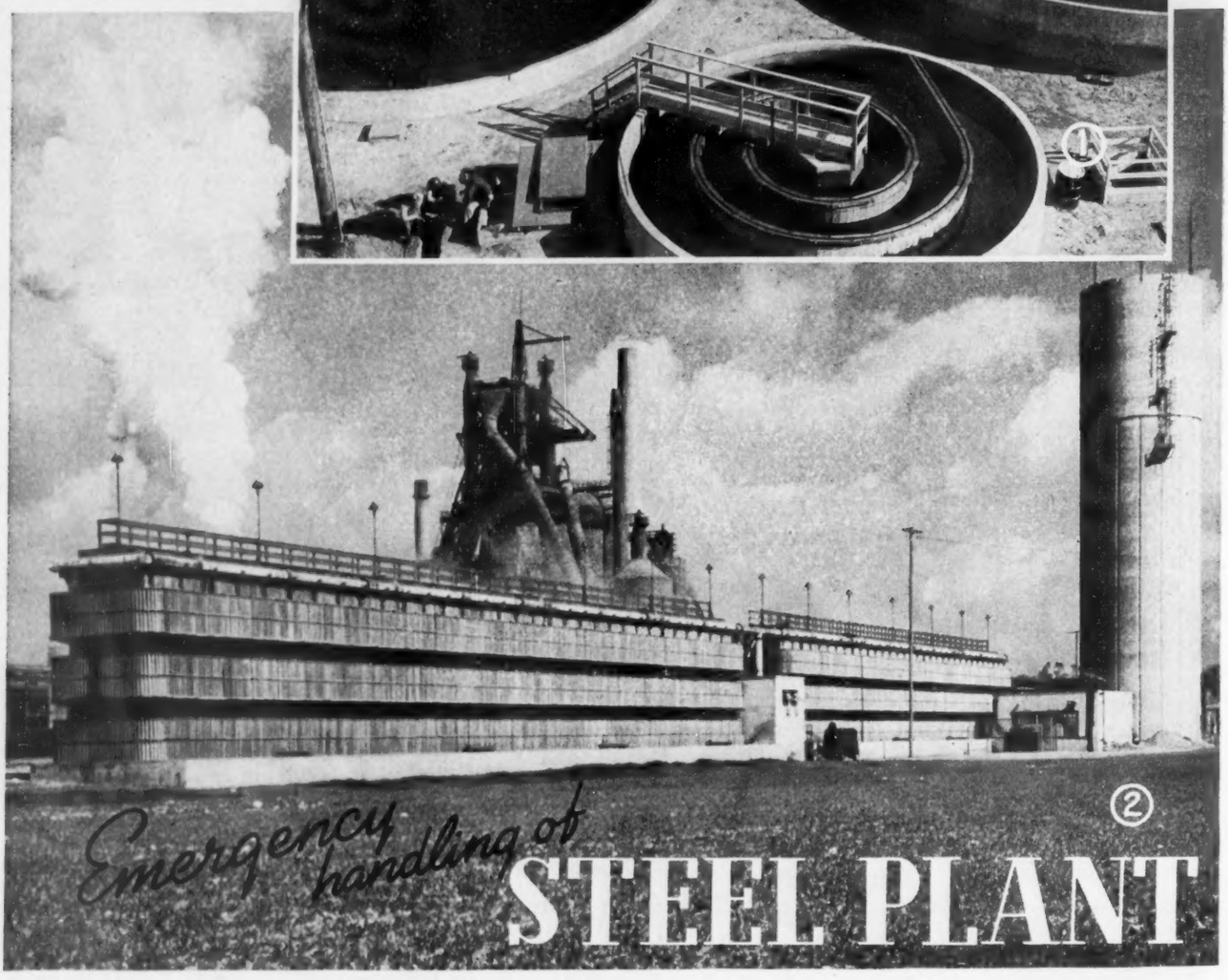


Fig. 1—Sewage disposal tanks including pulverized limestone bin and chlorination tank in the foreground

Fig. 2—General view of water coolers and industrial elevator; blast furnace in background



Emergency handling of STEEL PLANT

Fig. 3 — Exterior of open-hearth shop which houses six 186-ton basic furnaces

Fig. 4 — Domestic water supply furnishes this modern locker room with sanitary facilities for the plant personnel

Fig. 5 — Plate mill consists of a 2 and 3-high mill

WATER SERVICE

By G. ELDRIDGE STEDMAN

Double supply lines serve open-hearth, rolling mill and blast furnace departments of western plant and provide security against interrupted service in case of pipe breakage. Steam and gasoline standbys take over in case of electrical service failures. Waste disposal is handled by modern facilities

STEELMAKING does a business in heat which must be dissipated instantly from the working rigging. If the rolling mill operator in the pulpit in converting an ingot at 2200°F discovers in the midst of conversion that the roll cooling water has failed, what can he do with the product in the rolls? Or if the coke car is under the quench without a water supply? Or if the turboblower bearings are without adequate water cooling? Since any of these failures in water supply can create havoc, emergency arrangements have been set up in relation to these possible failures at the Iron and Steel Division, Kaiser Co. Inc., Fontana, Calif.

The 2,550,000 gpd from the Fontana Union Water Co. may be interrupted by breaks in its concrete line. This could be instantaneously compensated by shifts to wells Nos. 1 and 2 on the property. These are capable of a combined 4000 gpm delivery, more than enough for all makeup purposes.

In further assumption of the failure of both Fontana supply and Kaiser wells, this would shut off all water reaching the treatment plant. So would a breakdown of power serving the two deep wells. But with power still on No. 2 well through the steel pipeline, it can pump into the industrial system because the connection is valved for that operation. Capacity is 1400 gpm against the full pressure of the elevated tank.

At the worst, no shutdown would be required unless restoration of the cause of failure should take longer than the service of water in storage. Emergency storage is:

Source	Capacity, gal
Industrial reservoir	1,200,000
No. 1 cooling tower basin	400,000
No. 2 cooling tower basin	450,000
Domestic reservoir	500,000

This would supply the total plant requirements for approximately 10 hours. Recirculating facilities would be intact. With storage at full stage, supply makeup would give enduring protection, providing all waste was stopped.

If the elevated tank water service is interrupted, domestic water can be supplied by the gasoline driven pumps, pressure regulated by speed.

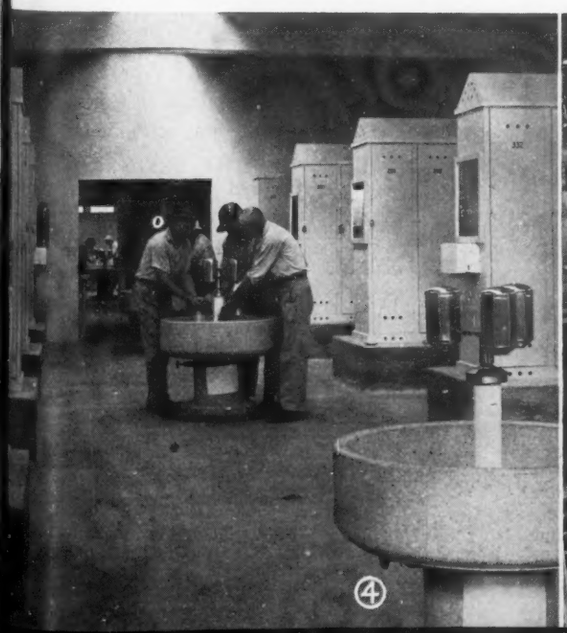
Industrial makeup water for the steam plant cooling tower and for No. 1 cooling tower is serviced by two separate pipelines. These seem sufficient stand-by protection. Rolling mill makeup water can be supplied by either of two pipelines. Industrial service water at plate, structural and merchant mills is through separate pipelines from pumps. Breaks could interrupt service until repaired, causing suspension of production. But no property injury could result, except, perhaps, at the reheating furnaces. To obviate this a connection to each furnace cooling piping has been provided from a nearby motor room cooling pipeline, facilitated by an automatic valve for immediate changeover.

Industrial water service to open-hearth furnaces has double supply lines, one of which originates at the industrial pump header near the riser of the elevated tank, the other is a secondary 10-in. pipe from a 24 in. overhead pipeline, transporting water 450 ft to the open-hearth building. A break here would be followed by a fast temperature rise in the open-hearth furnace concerned, calling for action by furnace operators. Injury might occur to doors and other rigging.

Industrial water services the blast furnace by two separate pipelines which give tandem security against interruptions of service due to pipe breakage. A third resort is some 2500 gpm that can be provided by operating the gasoline fire pump.

Industrial water service to the by-products area is also a single pipeline, and any break would stop it. A separate service is rigged direct to provide 750 gpm to the ammonia and benzol coils from the industrial reservoir.

An auxiliary gas washer circuit has been completed which applies waters in two ways into this service. There is a single pipeline pumping slurry to the



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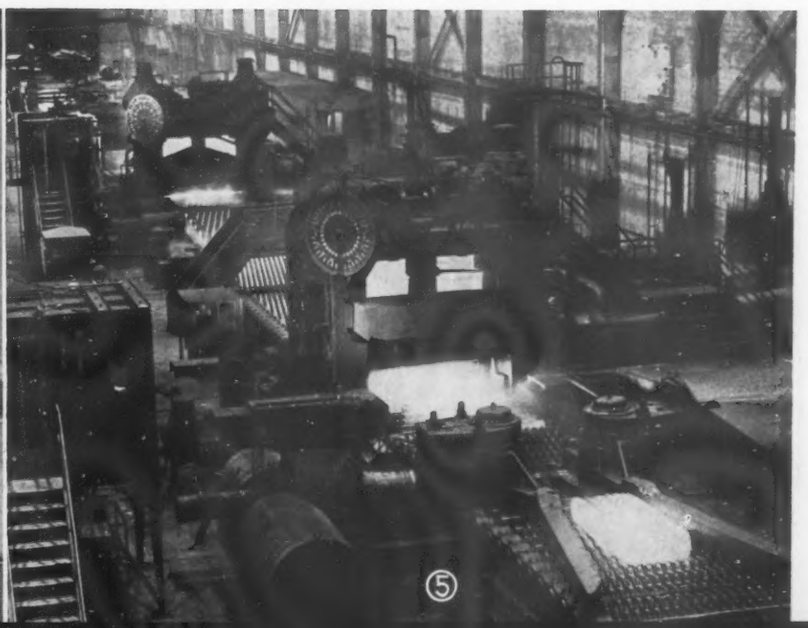

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thickeners and its break would require suspension of gas cleaning, necessitating gas waste. However, no injury to these facilities would result.

The possibilities of failure from the pump breakdown are guarded against by ready spare installation. These spares are given recurrent test running to assure their instantaneous functional abilities.

Electrical service failures are largely offset by steam and gasoline standbys. Power failures at the varied stations could by handled in this manner:

(1) Rolling Mills: It would take 30 to 45 min before temperature rise from cooling pump failure would create damage. Production would then have to be slowed up or suspended.

(2) Scale Pit Pumps: In the plate mill, inadequate scale flushing might result. However, pit overflow provides an outlet. Production could continue by wasting water.

(3) Open-Hearth Return Pumps: This failure would cause an overflowing of the sump. More makeup in the system would temporarily adjust it.

(4) Gas Washing Pumps: Power failure here would be taken care of by resorting to the by-pass supply from the main industrial system.

(5) Cooling Tower Pumps: This power failure would cause temperature rise in industrial water, necessitating waste of hot return water and bringing in larger quantities of make-up. At its extreme, excessive demands upon Kaiser wells and its Fontana water supply would be protective.

(6) Main Industrial Pumps: Failure here can be adjusted by steam pumps. Current to these main pumps is served by two main circuits through two 600 kva transformers. One side alone would provide power up to 600 hp when the other side is out. If the load was greater than 600 hp excess would have to be cut off. The pump man, in such exigencies, must be on the alert. Automatic shut-off was being designed to disconnect overload at the time of my plant visit. With this in function, steam pumps will be depended upon to continue full service.

(7) Complete Main Industrial Pump Failure: This would immediately be signalled to the open-hearth building, by-products plant, blast furnace. The steam pumps are alertly maintained, good for 10,000 gpm if essential. If return water could be recirculated in the cooling tower, only partial restriction of water would be necessary. The blast furnace could receive its usual 5000 gpm and the open hearths most of their 3000 gpm. The by-products supply could be curtailed. If return water could not be recirculated, large quantities of make-up would have to be let down and further restriction would be essential: For example, by reducing the open-hearth supply, cutting off the blast furnace or suspending gas washing.

Blowing down of cooling circuits, sludge disposal, industrial wastes and floor drainage require waste disposal in the plant's industrial sanitary service. Sewage of the main outfall trunk sewer enters the plant by gravity through a grit depression flume. The flow divides through two 10-in. comminuters, uniting for measuring through a meter flume and thence tumbling into the influent wet well. Here, three pumps lift the sewage to the primary clarifier.

The primary clarifier is a clarifloculator 50 ft diameter with 7½-ft side water depth. Means for introducing chemicals is provided for accelerating separation of solids, and scum from the effluent liquor. However, until the second blast furnace is installed it is anticipated that chemical treatment will be unnecessary.

The scum is removed from the surface by a skimmer; the settled sludge is removed by squeegee blades wiping the bottom of the tank; the effluent is collected in a collar-type flume, or launder, around the top of the tank. The effluent is distributed over the surface of a 50 ft trickling filter having a blanket 3 ft deep of hand placed coarse rock.

Part of the primary filter effluent is returned to the influent wet well for re-circulation through the primary clarifier and primary filter. The balance of the filter effluent, equivalent to the plant influent, is collected in the secondary wet well. From the secondary wet well the effluent is pumped partly to the secondary filter and partly to the secondary clarifier. The portion going to the secondary filter returns to the secondary wet well and the portion pumped to the secondary clarifier is again split so that part is returned to the secondary wet well and the balance, clear effluent, continues in cycle to the chlorine contact basin. This latter portion of the effluent from the secondary clarifier is equivalent to the influent to the sewage treatment plant. The period of sterilization in the chlorinating basin is prolonged by a spiral wooden baffle wall, height of which is equivalent to the water depth. The spiral bafflle makes the period of contact with chlorine not less than 40 min under standard plant flow conditions. The dimensions of the chlorinating basin are 30 ft diameter with 7½ ft under water depth.

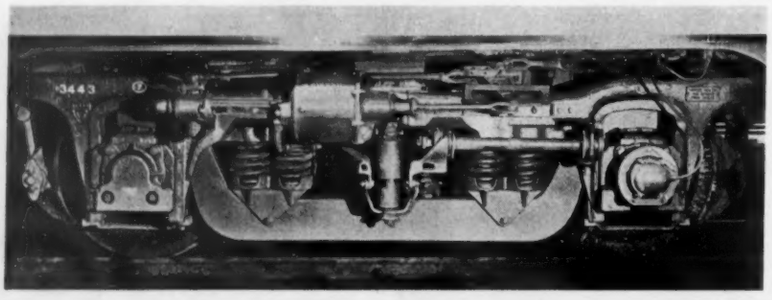
The final effluent from the chlorinating basin is clear and sterile. This reclaimed effluent water from the treatment plant is pumped to the industrial water system, thus reducing the amount of fresh water makeup for the industrial system.

The sludge from the secondary clarifier returns to the influent wet well and is pumped into the primary clarifier. The sludge from the primary clarifier is pumped into the digester tank.

Sludge drying beds are provided for the sludge residue from the digester tank. Gas control and burning equipment are installed for the gas produced during the digesting operation. The digester tank is provided with sampling and scum relieving facilities. Dimensions of the digester tank are 30 ft diameter by 20 ft high and its construction is reinforced concrete with dome roof.

Major product of the sewage treatment is the reclaimed water which is pumped for reuse in the industrial circulation system; the digested sludge is deposited in beds for drying for further use as fertilizer; the gases generated during digestion are consumed by burning.

It is to be noted that no liquor or water at any time is deposited directly in or on the ground, except for the small quantity retained in the sludge when it is deposited in the drying beds at infrequent intervals. This is of particular note because one of the major design restrictions imposed upon the sanitary system is that it is not permissible to dump or waste impure water in quantities which might be objectionable in the ground waters.



RAILROAD SHOCK ABSORBERS: New stem-end mounted direct-action shock absorbers shown on this Pullman-Standard built railroad car were manufactured by Monroe Equipment Co., Monroe, Mich. Improvements include heat resisting synthetic seal in addition to standard leather seal, plated piston rods and honed pressure tubes. Extended shield is said to give additional protection against flying cinders and dust

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Willey's Carbide Tool Company, Detroit, reports the following benefits from TOCCO *Induction Brazing* of tool tips:

1. *Large lathe tools:* **8 times as fast.** *TOCCO brazes 85 per hour; former method 80 per day.*
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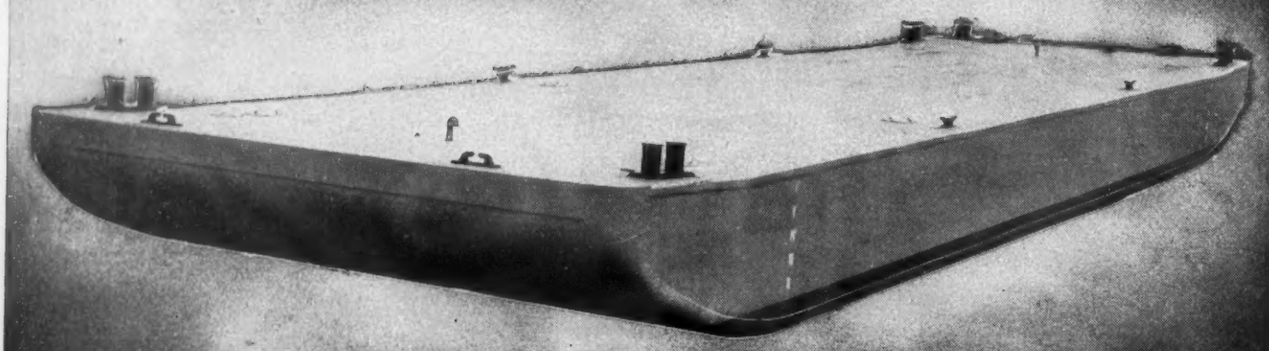


Liquid—dry cargo—drilling rigs—derricks. Look over our stock designs—or let our engineers design a barge to suit your particular needs.

Pictured here is an all-purpose barge to meet post-war requirements. It can be used for either deck or liquid cargo. Notice the long, plated rake—for swifter, easier towing. Dimensions: 110' x 30' x 7'. Capacity: 450 tons of deck or 3,200 barrels of liquid cargo.

STEEL

AVONDALE MARINE WAYS, INC.

TELEPHONE: OFFICE AND PLANT, WALNUT 8970

RIVER FRONT, NEW ORLEANS DISTRICT, WESTWEGO, LOUISIANA

Steel In Construction

(*Continued from Page* 101)

principal functions of exterior walls are to protect the interior from the elements, to provide a reasonable degree of heat insulation and to afford adequate fire protection. Only enough strength is needed by the wall to carry its own weight and assure the necessary stiffness, as each floor and its load is supported by the structural framework of the building. If proper safety is provided, all these wall functions could easily be taken over by double-walled insulated steel panels, thus greatly decreasing the weight of the outside walls and holding material costs to a minimum, while at the same time simplifying foundation construction.

The appearance of the exterior of such a panel-constructed multistoried commercial building would be little changed from its present appearance. Outside coverings practically duplicating the appearance of present type materials can be produced in the modern porcelain enamel coatings on steel. It is suggested, however, that too slavish simulation of familiar finishes should be avoided as the new materials possess architectural merit of their own which should be utilized. Such changes in new buildings will be slow, but certain, as their use and economy are proved.

Code Activities Co-ordinated

The steel industry has co-ordinated its building code activities and is working with the code making bodies of the various cities, providing them with data and information relative to the qualifications and limitations of the various types of steel construction.

Fire is perhaps one of the most destructive forces in our modern cities. Modern construction demands the use of suitable materials governed by intelligent building regulations to combat this hazard.

American Iron & Steel Institute has done an outstanding job in its book on "Fire Protection Through Modern Building Codes," written in 1945, which presents a careful analysis of fire hazards, the problem of fire protection and suggestions as to proper regulatory procedure. It has also published a book on "Building Code Modernization," February, 1946. This is in the form of a series of bulletins covering information and data prepared for code-writing city officials. They cover many subjects, such as the purpose and legal limitations of building codes, building classification and fire protection, and provide standards for steel used in such applications as roof decks, formed steel constructions, steel joists, floors, and steel veneers. Suggestions are all based on recognized standards and on sound conservative engineering procedure.

The American Iron & Steel Institute has an active Building Code Committee which is constantly at work on problems relating to building. As part of a structural research program, tests conducted by Cornell University and sponsored by that committee were discussed in a recent article, "Technical and Commercial Developments in Light Gage Structural Steels," which appeared in STEEL March 19, 1945, Page 108.

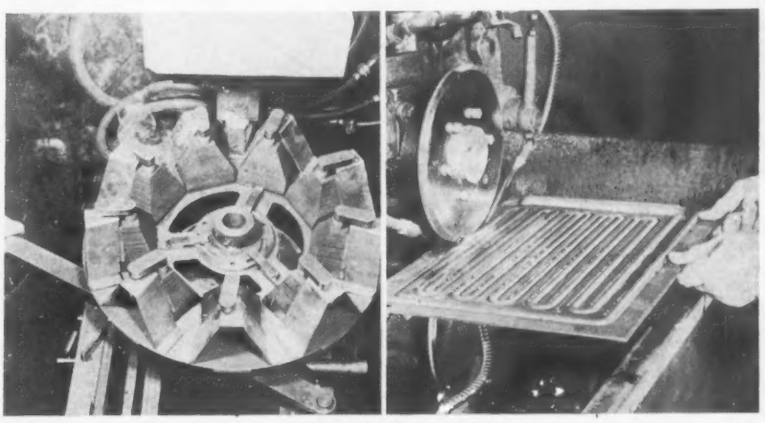
With the use of large tonnages of light steel sections, it is anticipated that many questions, investigations and problems dealing with the expectancy of corrosion difficulties will arise, as was the case when the heavier structural steel shapes were introduced. An investigation into the data on corrosion shows that thousands of books and articles have been written on this subject. One list contains over 7000 separate investigations and reports. The United States Steel Corp. has recently issued a booklet discussing the causes and prevention of corrosion of steels. A number of large paint companies have also done much work on this problem.

Various associations have done valuable work in the study of the subject of corrosion and its prevention. The American Iron & Steel Institute has published a booklet on "The Durability of Lightweight Types of Steel Construction," based on an extensive survey made in 1940. The institute sponsored this survey of lightweight building construction and engaged the Pittsburgh Testing Laboratory to examine and report its findings on fifty light steel installations in buildings ranging from 10 to 35 years old. The report shows that the installations generally are in excellent condition and are structurally sound, and concludes that shop painted lightweight steel construction enclosed within a building under normal conditions may be expected to retain its structural properties during the life of that building.

Wrecking companies in New York, Philadelphia and Chicago which have demolished buildings containing many hundred thousand tons of steel, state that in their work they have not found any serious evidence of corrosion. All of these wrecking contractors stated that a large part of the structural steel removed from wrecked buildings is reused in new construction.

The Madison Square Garden in New York City was dismantled after 35 years of service. After this long life no trace of corrosion was found in 99 per cent of the beams, columns, girders, purlins, braces and roof trusses. The trusses were removed and re-erected in the new building. No structural impairment had developed from corrosion. Dozens of

Film Shows How To Cut Costs with Resistance Welding



TO promote an understanding of the operating principles, advantages and types of resistance welding, the General Electric Co., Schenectady, N. Y., is offering a 16-mm all-color sound movie, "This is Resistance Welding" to all groups interested in the subject. Film emphasizes the role of resistance welding in production of products of a wide variety of sizes, shapes and materials. Illustrations from the movie here show two of the four forms of resistance welding. At left is a closeup of the projection welding operation on fans for large motors. A refrigerator evaporator is being fabricated by seam welding in the photograph at right. Other types of resistance welding, spot and flash, and the basic operation of synchronous electronic control equipment in their operation, are covered along with examples of how this type of welding is able to cut costs, increase production and open new fields of employment

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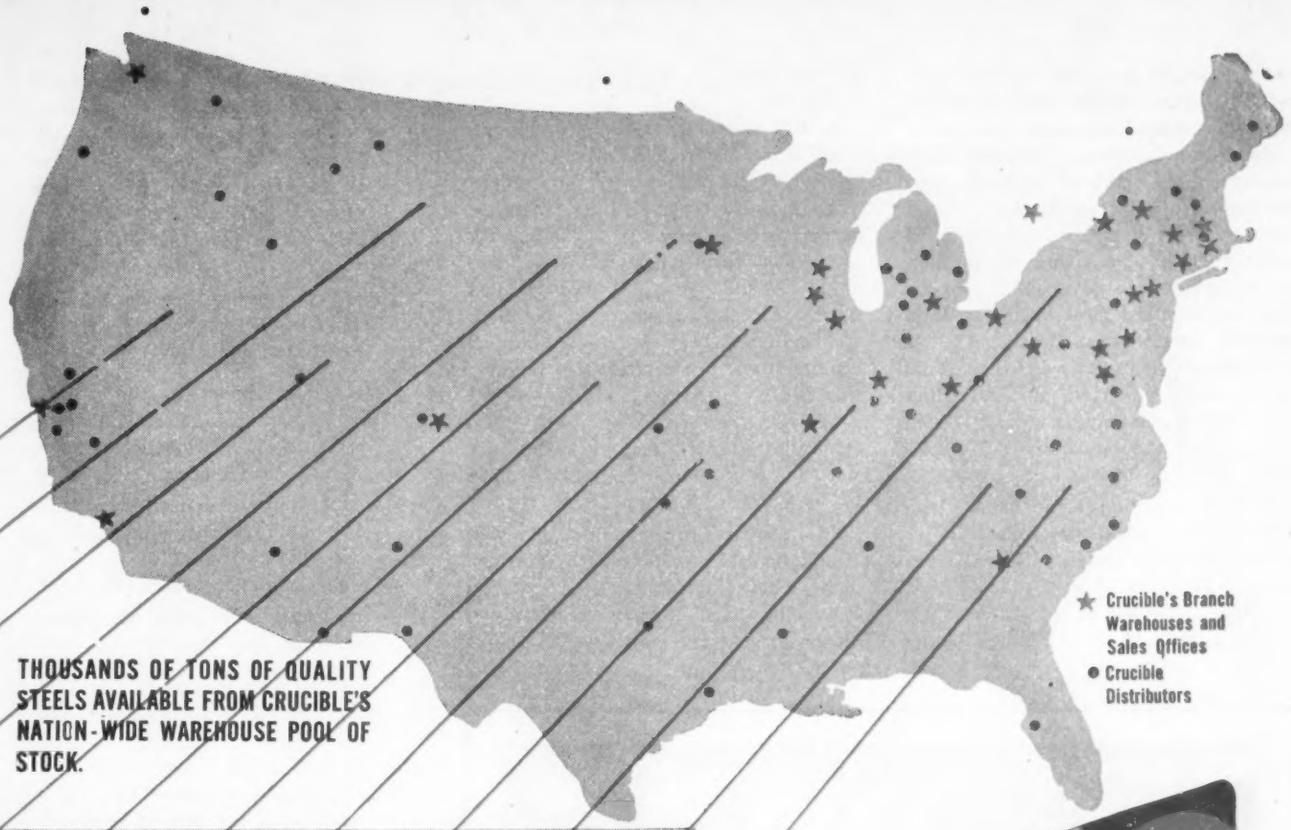

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similar examples are listed in various research bulletins. Studies made at various universities come to the same conclusion.

Many manufacturing companies have investigated the status of numerous steel installations to ascertain the facts on the various uses of steel in construction and building equipment. One organization producing roof deck advises that no problems on corrosion have been noted on properly protected sections. A stair manufacturer states that when steel stairs are properly protected, no difficulties arise. When even ordinary paint is used and applied at regular intervals, corrosion offers no serious problem.

A steel insulation manufacturer who uses a terne coated steel sheet in his product reports a number of installations 11 and 12 years of age still in good condition . The use of this material was approved by the Federal Public Housing Administration on the basis of this investigation.

A steel floor manufacturer has found from numerous investigations that corrosion is no problem even in applications where moisture occurs, if the floor is protected with a properly applied finish coat. The Real Estate Trust building in Philadelphia, used 16-gage painted sheet steel tees and straps in the floor arch system. They were still in good condition 46 years after the building was built.

One of the prominent sheet metal magazines estimates that the majority of steel furnaces in use today have been in service over 25 years.

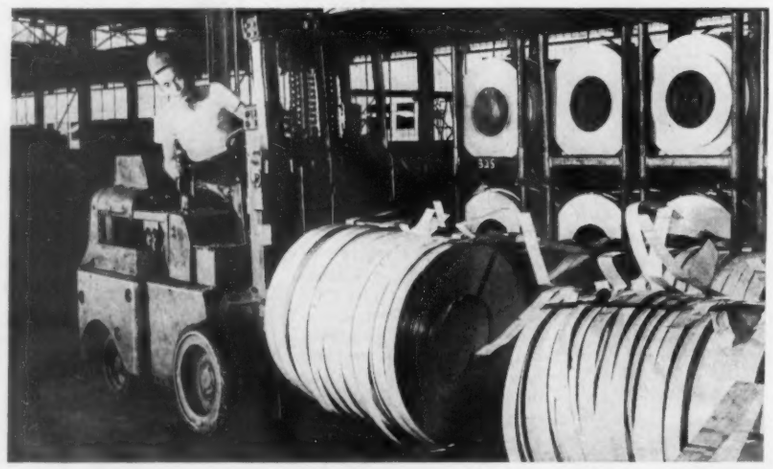
In many industries, such as bakeries, food preparation factories, laundries and many others, high humidity is required. It is well known that when warm moisture laden air contacts surfaces below the dewpoint temperature, condensations will occur. Condensation occurring either by natural temperature changes or by additions to the vapor content of the air must be provided for and taken care of in the design and construction of buildings where these conditions are found to exist.

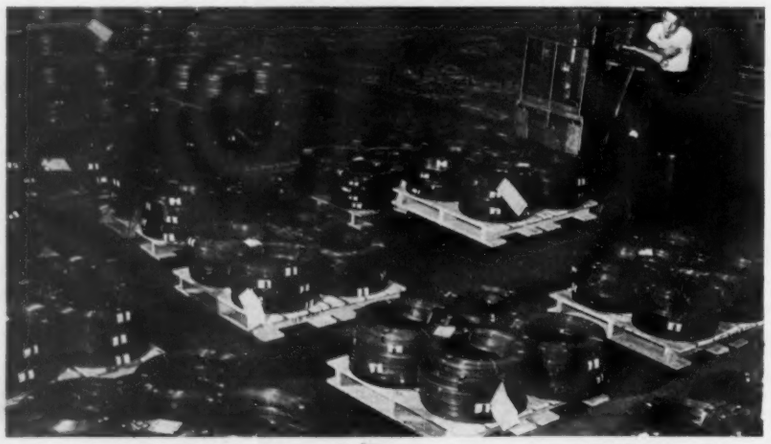
These problems can be solved in the design and engineering of the structure by the architect and builder by:

1. Proper insulation to prevent the metal parts of the building from reaching the dewpoint and thus causing condensation.
2. Proper vapor seals to prevent laden air from entering the building through the walls.
3. Proper barriers to prevent the movement of vapor laden air through the building.

From time to time articles have appeared in various periodicals discussing the problems of condensation and corrosion. On careful investigation it appears that these problems have not all been analyzed in the light of proper design and construction. Proper design involves such matters as correct insulation, ventilation, vapor seals, consideration of thermal conductivity of walls and floors, soil conditions, and location of water lines, as well as careful inspection to assure that the structure is built as designed. Where all these factors have been taken into account, corrosion is seldom a problem.

The co-operative efforts of the steel producer, designer, engineer, manufacturer, and builder are constantly extending the use of steel in all types of building construction. New uses are being found; new and better ways of applying and protecting steel are being developed. The product is being adapted to meet new needs as they arise and field and laboratory research is continuous. Many new steel products and uses have thus been developed in the past and still more may be expected in the future.



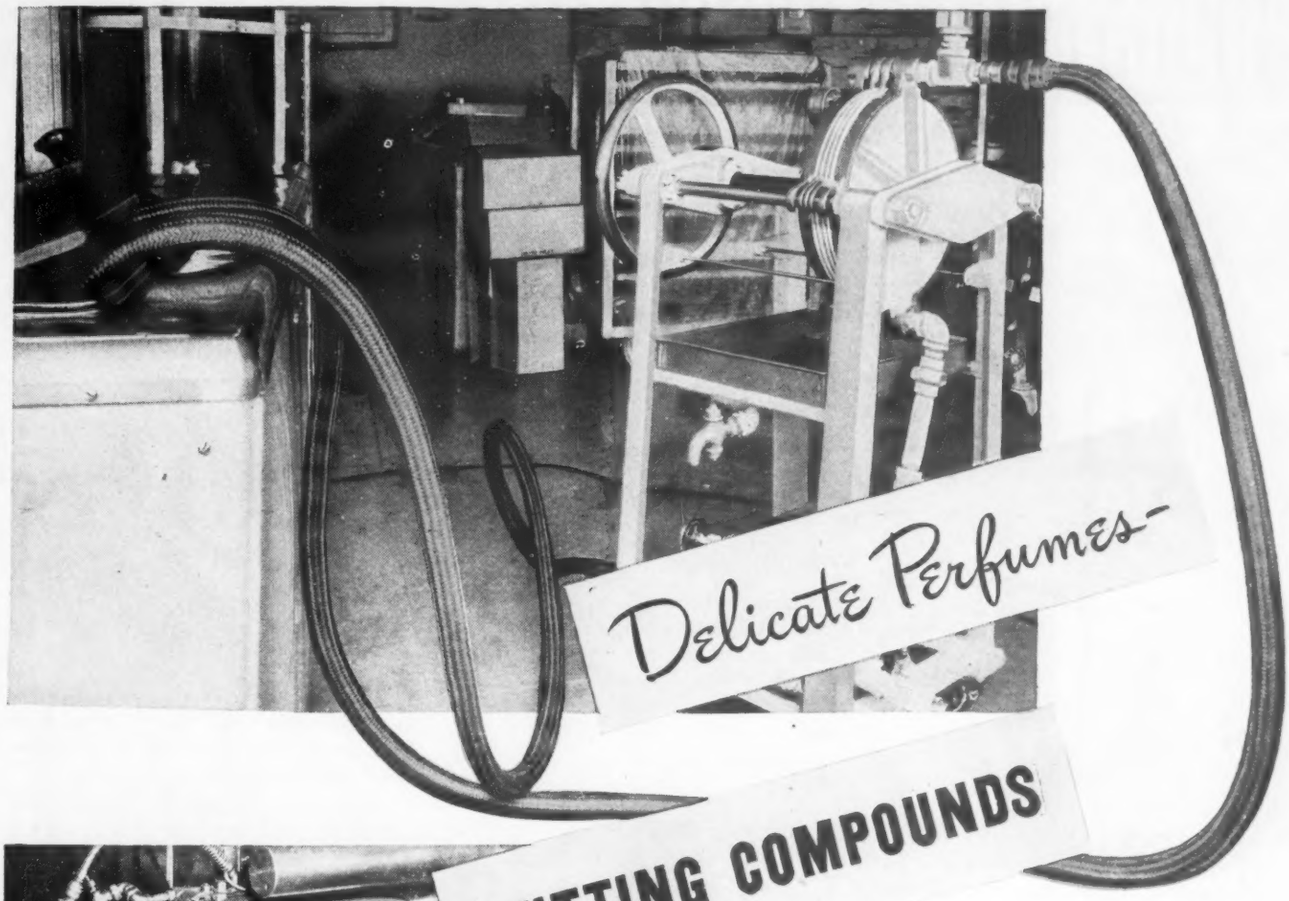


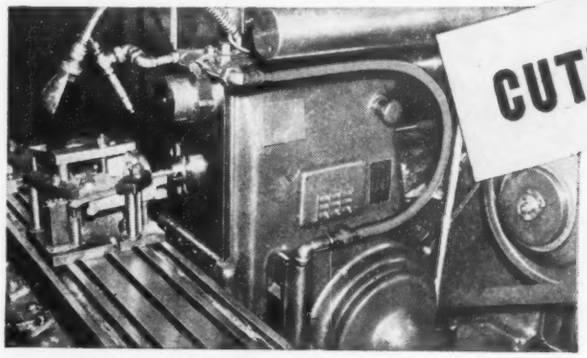
MAKING THE MOST OF LIMITED SPACE: Serious obstacle of limited storage space was overcome quickly and effectively in the plant of a leading steel company by use of pallets and versatility of this fork truck built by Clark Tructractor Division of Clark Equipment Co., Battle Creek, Mich. Shown above, truck is handling easily a 6480-lb load of coiled steel on its adjustable forks. Below, palletized shipments of steel are sorted and transported quickly, eliminating necessity of manual loading and unloading

Steel Joist Institute Issues New Booklet

The Steel Joist Institute, 3709 Twenty-fourth Street N. E., Washington 18, has just published a revised edition of "Steel Joist Construction" for architects, engineers and building commissioners. Included are new, revised "Standard Specifications for Steel Joist Construction" and "Recommended Abbreviated Regulations for Use in Building Codes." Other exceedingly useful information will be found in the booklet which may be obtained gratis by addressing the institute.

• *The readily-maintained cleanliness of American Seamless assures this user complete freedom from impurities that might contaminate delicate perfume being carried between storage tank and filter.*





• *American Seamless is standard equipment on this make of milling machine. Used for carrying oils, solvents and cutting compounds, its sturdy toughness assures long, economical service.*

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Designed for safe, easy transporting of any size individual tank of oxygen or acetylene from stock to job, the new two-wheel Wheelrite No. 3 cylinder handling

truck developed by Weldrite Co. Inc., 29-23 40th road, Long Island City, N. Y., will stand up under the most adverse shop and field conditions. Of welded construction, it rolls on 10½ in. wide-flanged steel wheels. Framework of truck is of angle iron and tubular steel.
Steel 7/8/46; *Item No.* 9146

Drilling, Tapping Unit

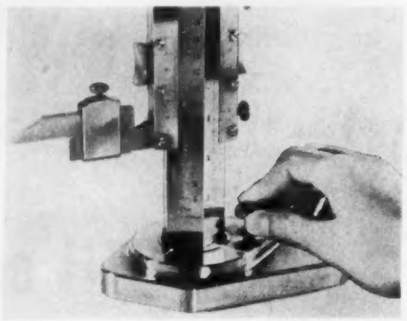
An automatic drilling and tapping unit, manufactured by W. K. Millholland Machinery Co., 1048 Fairfield avenue, Indianapolis 5, drills and taps pipe plug holes in one handling, while performing other operations at the same time. Machine consists of motor-driven automatic work unit with a 2-spindle head attached, and supported in a housing mounted in same base plate with unit.

Automatic cycle of development consists of rapid approach of drill to work, slowdown feed for drilling, rapid return, index 180 degrees, rapid advance of tapping spindle, slowdown for tapping operation, reverse tapping spindle, backout, rapid return to back position, index 180 degrees and stop. It is mounted on base of a double-end boring and reaming machine.

Drilling and tapping operation is performed while other operations are under way at ends, saving extra handling of part.
Steel 7/8/46; *Item No.* 9453

Height Gage

George Scherr Co., 200 Lafayette street, New York, announces a new 48 in. Chesterman height gage for the precision inspection, layout, scribing and checking of large size jigs, fixtures, dies and castings. A large 2.450-in. vernier reads to 1/1000-in. on English scale and 1/50 mm on metric scale without necessity



of removing gage from work and holding it up to the eye employing magnifiers.

Graduations are made on a heavy triangular beam and adjustment is obtained by pressing two lugs. For fine adjustment, which appears in base as illustrated, the downward pressure on screw helps hold tool firmly to a surface plate.

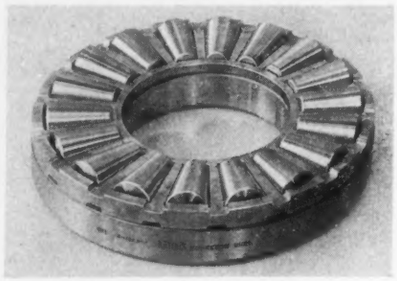
Gage is completely hardened and ground and has extremely accurate graduations.

In addition to the new 48 in. size, it is manufactured in 12, 18, 24 and 40 in. sizes provided with both English and metric scales.
Steel 7/8/46; *Item No.* 9398

Conical Thrust Bearings

A line of conical thrust bearings applicable to steel-mill and other heavy duty equipment is announced by Kaydon Engineering Corp., Muskegon, Mich.

Design of bearings is such that apex of cone formed by rollers meets at true center of bearing. This permits the rollers

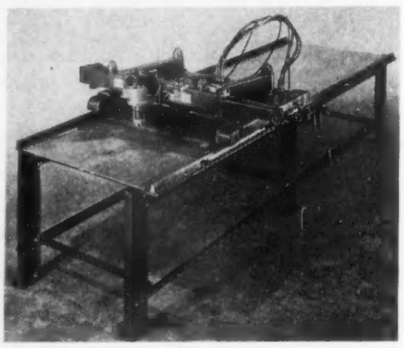


to align themselves between tapered faces and outside rib of raceways. One-piece bronze cage acts only as a separator.

Kaydon is offering a complete series of standard size bearings from 9⅞ to 19½ in. outside diameter, with load capacities up to 440,000 lb.
Steel 7/8/46; *Item No.* 9169

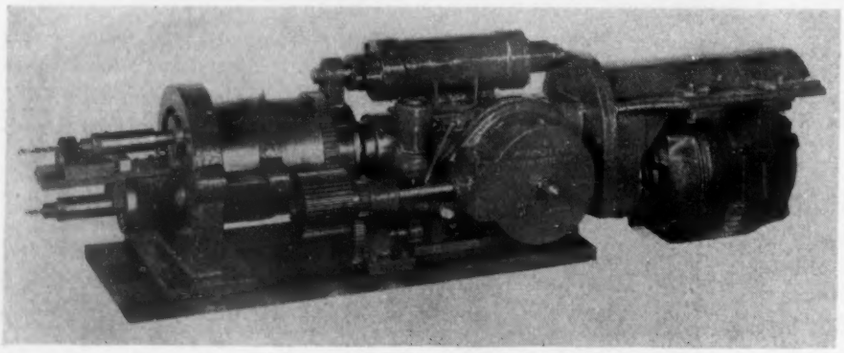
Shape-Cutting Machine

A new machine, the Oxweld CM-15-36 oxy-acetylene shape-cutting machine, is announced by The Linde Air Products Co., 30 East 42nd street, New York, for



precision cutting work of intermediate size. An attachment for the machine makes possible mounting of blowpipes on both sides of tracing table, making machine adaptable for cutting of identical shapes simultaneously from plates on both sides of tracing table.

Machine has 36 in. transverse working range and longitudinal working range with standard table of 100 in. Range



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- You gain More Productive Time per machine.
- You save lubricant, repair costs, and make machines last longer.
- You can safely, positively lubricate hundreds of bearings from one central point without stopping machines.

Alemite Systems are adaptable to almost every type of light and heavy machine used in the steel industry. Cranes, straighteners, tables, shears, blast furnaces, blooming mills, structural mills, rolling mills, levelers, etc. They can be installed for manual or automatic operation on present equipment, or built into new machines as original equipment. The over-all savings can enable you to amortize an Alemite System in as little as 3 months.

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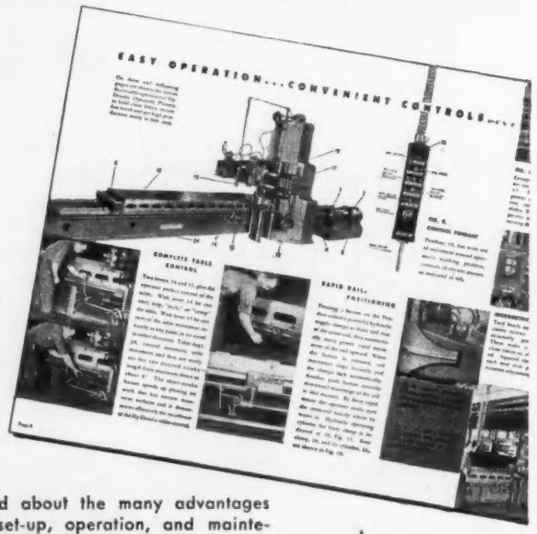


☆ Read about the many advantages in set-up, operation, and maintenance that result from Rockford Hy-Draulic design and construction. ☆

4602

ROCKFORD MACHINE TOOL CO., ROCKFORD, ILLINOIS

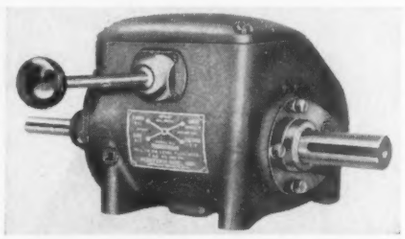
can be extended indefinitely by adding frame and table top sections.

Two pivoted arms mounted on free-rolling cast aluminum carriage give blow-pipe motion in any direction within limits of work area. A flat aluminum plate, 42 in. by 144 in. supported on frame between rails of track, serves as a table surface upon which drawing or templet is placed to be traced.

Tracing head is powered by a 110 v universal motor. Eddy-current type speed governor gives an infinite variation of speed from 3½ to 28 rpm.
Steel 7/8/46; *Item No.* 9345

Transmission

A new transmission adapted to flat plate or platform mounting is announced by Western Mfg. Co., Detroit. Identified as 9000 B series, it has 5 hp capacity with input speed of 900 rpm. Four gear

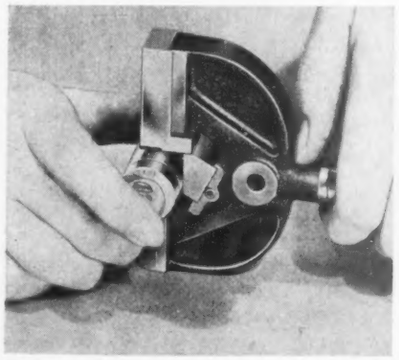


changes are available through its automotive type shift lever. Ratios are 1:1; 2:1; 3:1; and 4:1.

All lapped gears and shafts are of heat treated alloy steel. Revolving shafts are mounted on anti-friction bearings, and case is oil sealed.
Steel 7/8/46; *Item No.* 9348

Adjustable Air Gage Head

Adjustable Airsnap gage heads which provide desirable flexibility in checking external dimensions are announced for use with Precisionaire instruments manufactured by Sheffield Corp., Dayton, O. Eight models covering a range from 0.250 to 2.000 in. inclusive are offered. Maximum diameter of part to be checked determines size range and model.



Standard Airsnaps can be used on dimensions with tolerances ranging downward from 0.002-in. Tungsten carbide surfaces reduce wear on gaging anvils.

Gage head has a wide range of applications for checking external dimensions of work in or at machine or at bench. Can also be used on work which is too large or unwieldy to be presented to gage.
Steel 7/8/46; *Item No.* 9377

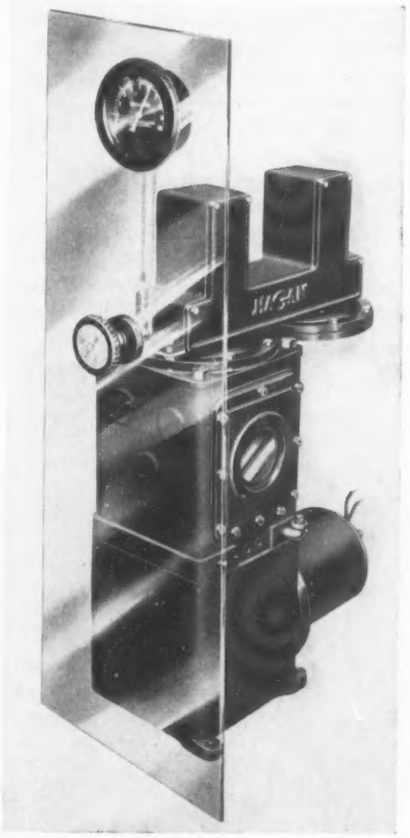
Roller Conveyor

A lightweight roller gravity conveyor of magnesium is being offered by Jervis B. Webb Co., Detroit. The 10-ft portable unit weighs only 68 lb, and can be used as a single section or combined in multiple units. One man can set-up or take apart 50 ft of conveyor in 1 min.
Steel 7/8/46; *Item No.* 9236

Pressure Regulator

A new Type 2-SO regulator for regulating ratio of pressures or differential pressures is announced by Control Division, Hagan Corp., Hagan building, Pittsburgh. An operating range from 0.10-in. water column to 5 psi, and a positive action, adjustable response, spinning pilot valve are featured.

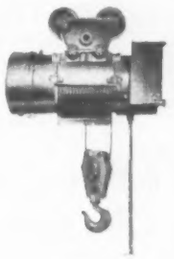
Regulator is used for such applications as control of suction, pressure or flow ratio in gas or air flow system, control of fuel-air ratio in industrial heating furnaces,



and control of gas or air flow proportions in industrial processes.
Steel 7/8/46; *Item No.* 9334

Electric Cable Hoist

A small, lightweight, powerful electric cable hoist of revolutionary design is announced by Lisbon Hoist & Crane Co., Lisbon, O. It is made in three sec-



tions, permitting complete and easy access to any part by removal of four bolts.

This hoist, called the Bob Cat, is made entirely of steel forgings and castings. Motor is enclosed in drum with patented heat dissipation construction and connection. Ball bearings are used throughout. All gears are of heat treated alloy steel.
Steel 7/8/46; *Item No.* 9379

Drill Sharpener

By turning a calibrated dial, the new drill sharpener introduced by Majestic Drill Sharpener Co., 1100 Second avenue South, Minneapolis, is automatically set so that both cutting edges and angles of the drill will be ground exactly alike. The sharpener will take any size drill from 5/32 to 1 in. with either straight or No. 2 taper shank. Fitting any grinder, it is easily adjusted to sharpen drills for use in either hard or soft materials.
Steel 7/8/46; *Item No.* 9244

Portable Brazer

Portable 5 kva brazer, weighing only 30 lb, for making lap joints in copper strap, brazing coil ends and general cop-

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 138.)

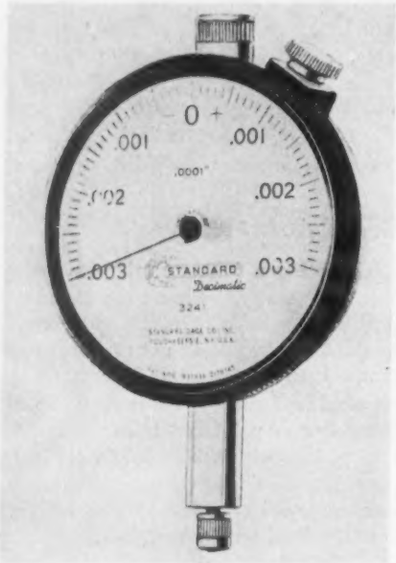
per smithing is announced by Westinghouse Electric Corp., Pittsburgh 30. Requiring connection to a 220-v source, it consists of transformer, voltage selectors, controls, and carbon-tipped tongs.

Alternating current from an adjustable voltage transformer passes through tongs and parts to be brazed, raising temperature to a point at which brazing alloy melts. Brazing alloy may be applied in form of a rod or ribbon. Three outlets are provided on the control panel of the brazer for 4, 6 or 8 v. A foot switch with pilot cable serves as the primary control switch.

Steel 7/8/46; *Item No.* 9353

Decimal Indicators

Standard Gage Co. Inc., Poughkeepsie, N. Y. is announcing indicators having dial markings in decimals, comparable to blueprint tolerances. Called Decimatic,



indicators have a modified range from approximately 20 min of to 20 min past on the dial.

Mounting dimensions are in accordance with American gage design standards and consequently Decimatic models may be used in fixtures made to receive AGD indicators.

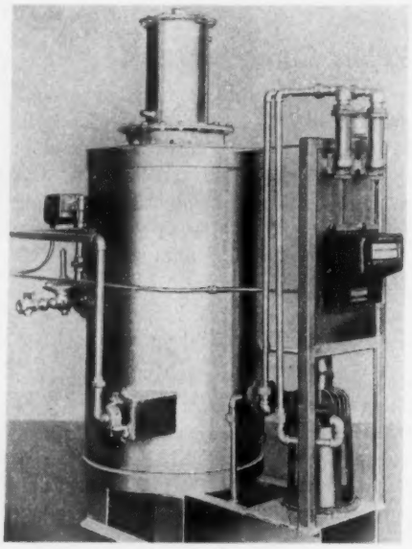
Steel 7/8/46; *Item No.* 9342

Gas Cracking Unit

A gas cracking unit, supplied with a catalyst and used in conjunction with heat treating furnaces to provide a protective inert atmosphere effective in temperatures upwards of 2450° F is being manufactured by Bellevue Industrial Furnace Co., Detroit.

Atmosphere generating equipment consists of a gas cracker unit with pyrometer, floscope, fire trap and automatic valves controls. Motor-driven Selas machine supplies air-gas ratio desired. Natural fuel gas at 100 btu per cubic foot is employed, although manufactured gas can also be used.

Cracking unit consists of a high nickel alloy steel retort which is heated externally by a small furnace built around

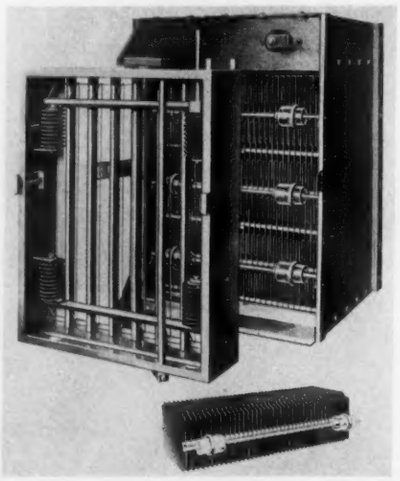


it, and operated at a normal temperature of about 1830° F. In the retort are high-temperature porous refractory cubes impregnated with a special catalyst. Heat of retort assures complete combustion of air-gas mixture, and catalyst embodied effects reaction which produces controlled atmosphere. Mixture is passed through cooling tower to lower temperature to approximately 250-300° F.

Steel 7/8/46; *Item No.* 9349

Electronic Air Filter

The Electro-Cell, a unit type electronic air filter with removable collector plate assemblies, is announced by American Air Filter Co. Inc., Louisville 8, Ky.



Positive and negative collector plates are assembled on cross rods to form horizontal groups. These are easily handled and may be removed readily from filter casing.

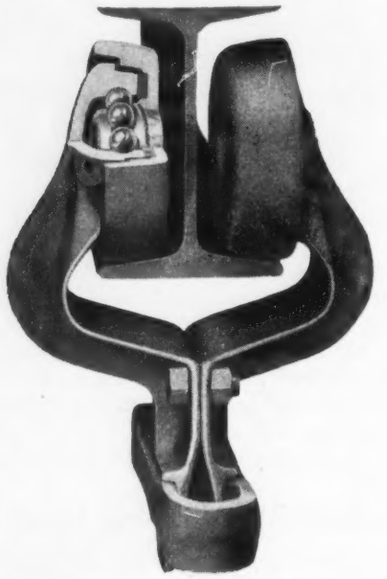
Plate assemblies can be removed for cleaning and reoiling at convenient water and sewer connections.

Standard sections of filter are 2 and 3 ft in width with a capacity of 1000 cfm per unit. Construction is such that it eliminates duplication of top and bottom sections of box-like units when assembled one upon another.

Steel 7/8/46; *Item No.* 9356

Conveyor Trolley

A new conveyor trolley which utilizes no wheel shafts or spindles and does not require separate retainers for its steel ball bearings, is announced by Link-Belt Co., 307 North Michigan avenue, Chicago. The two basic elements, the



wheel and one-piece bracket, form deep inner and outer races of bearing. Inner bearing race, being a part of wheel forging, revolves within outer race formed by head of trolley bracket.

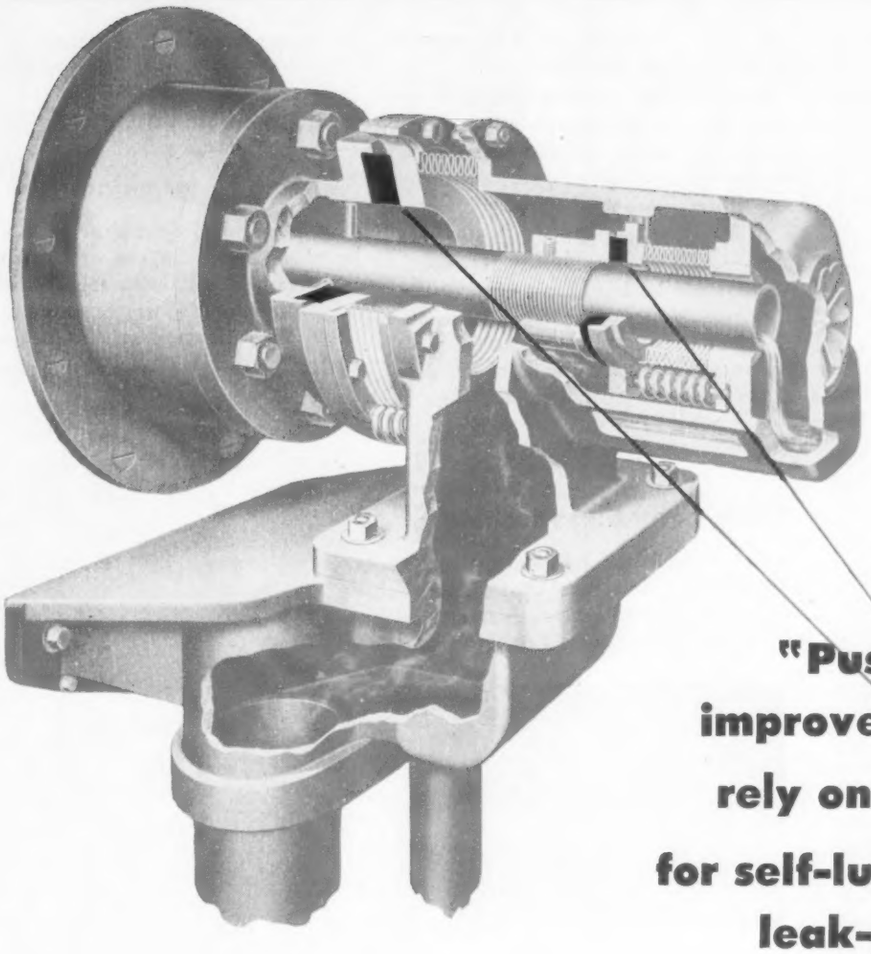
Lower ends of two brackets are connected by two bolts and have horizontal flanges between which trolley is joined with conveyor chain link. One-piece brackets transmit weight of suspended load directly from supporting clevis to ball bearings.

Steel 7/8/46;; *Item No.* 9351

Interval Timer

R. W. Cramer Co. Inc., Centerbrook, Conn., announces a new electric interval timer which controls running time of process equipment, duration of exposure as in x-ray machines, and to close one

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 138.)

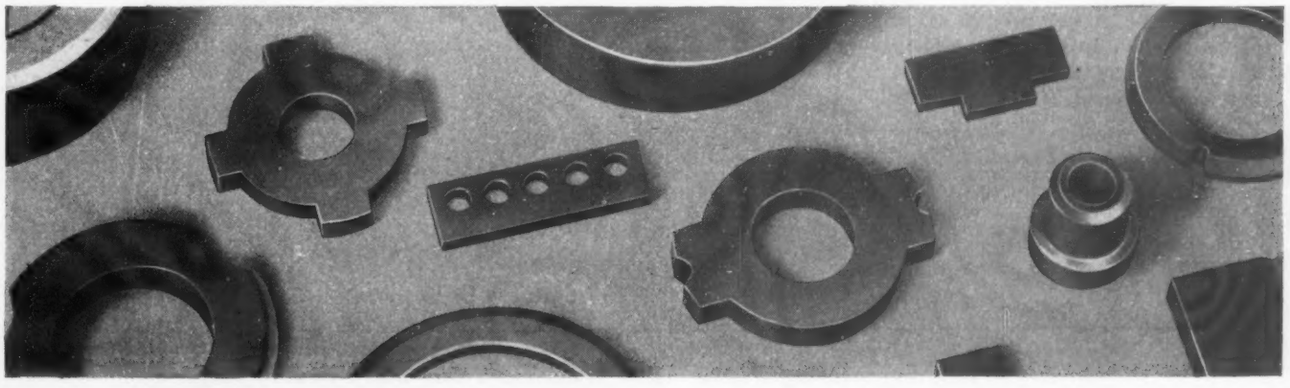


"Puseyjones" improved steam joints rely on graphitar (CARBON-GRAPHITE) for self-lubricating leak-proof seals

successful in scores of applications

The "Puseyjones" Improved Steam Joint is built from the ground up for operation in the Dryer Cylinder of the Modern High-Speed Paper-Making Machine (1) to keep the Dryer Cylinder completely and continuously filled with saturated steam, (2) to remove the water of condensation—completely and continuously—as fast as it accumulates, and (3) to operate with the minimum of frictional resistance between revolving and stationary parts. It is significant that The Pusey and Jones Corp., a leader in the paper machine industry, depends upon Graphitar seals in this vital installation. Graphitar seals are unaffected by extreme heat, they are highly resistant to wear, corrosion, and chemical attack, they are mechanically strong, they are self-lubricating, and they can be machined to close tolerances to assure close fit.

In hundreds of industrial applications, Graphitar seals, bearings, rings, and similar functional parts are improving mechanical efficiency. In ovens and oven conveyors, aircraft pumps, fuel pumps, rotary pressure joints, automotive air-brakes, dye vats, and in other mechanisms where resistance to friction, extreme heat or cold, and chemical attack is important, Graphitar parts are demonstrating their superiority. Graphitar parts can be produced to meet the precise specifications demanded by your particular mechanical problems. See listing in Sweet's File for Product Designers, and WRITE FOR ILLUSTRATED 44-PAGE CATALOG.



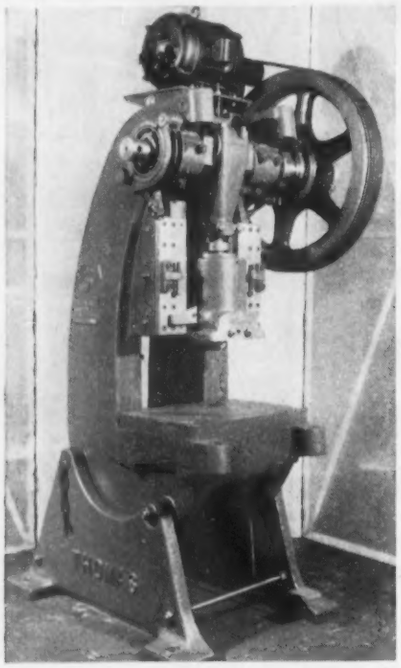
THE UNITED STATES GRAPHITE COMPANY • SAGINAW, MICHIGAN

circuit and open another at a predetermined interval.

This model E timer presents following features: Larger dials, sturdy frame construction, and simplified mountings so units may be grouped on instrument panels in combination with other control and indicating instruments.
Steel 7/8/46; *Item No.* 9251

Punch Press

A new series of open back inclinable presses of 50 (illustrated), 75, and 100 ton capacity is announced by Thomas



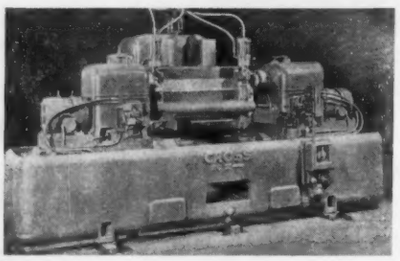
Machine Mfg. Co., Pittsburgh. Construction features include a one-piece high carbon steel crank shaft of rigid design with ground and polished bearing surfaces. Large bronze bushed main bearings of the 45 degree split type transmit thrust directly to semisteel frame.

Well-balanced flywheel has hub designed so that tool steel driving and backing blocks can be replaced when worn. Flywheel can be backed up without damage to the clutch mechanism.

A safety clutch permits single-stroke non-repeat, or continuous operation. Presses may be locked out of operation when setting dies or making adjustments. A safety stop incorporated in the shaft prevents accidental dropping of the slide if the brake should fail to stop shaft at top center.
Steel 7/8/46; *Item No.* 9255

Shaft Centering Machine

A new machine for facing and centering shafts in sizes from 1¼ to 6 in. diameter by 9 to 48 in. long is announced by Cross Co., Detroit. Cutting rigidity



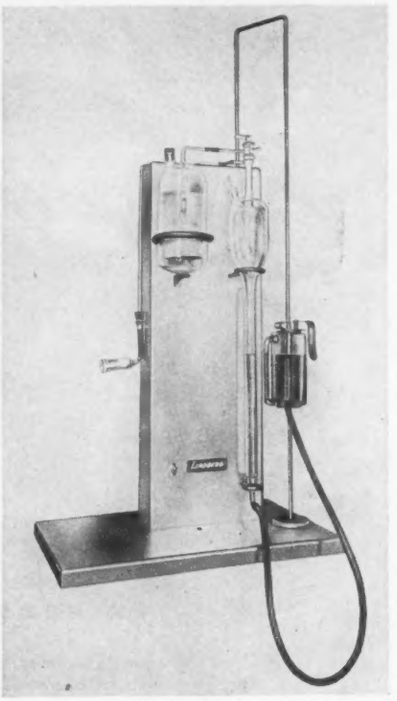
is attained by supporting both the work, regardless of length, and the cutters at the point of cut.

Machine operates in a full automatic cycle controlled by push button. Shafts are rolled on loading rails into clamping jaws and hydraulically clamped on each end. Work then feeds up to mill both ends. Hydraulic feeding and traversing heads connected with work clamps are quickly and easily positioned to change from one size shaft to another with an average changeover time being 10 min.
Steel 7/8/46; *Item No.* 9400

Carbon Determinator

A new carbon determinator easily and quickly adapted for use with any high-temperature combustion tube furnace is announced by Lindberg Engineering Co., 2444 West Hubbard street, Chicago.

Its precisely graduated burette is



mounted in front of a fluorescent light for easier reading and elimination of eye fatigue. An accuracy of one point of carbon is claimed. Burette is water jacketed and graduated for ½ and 1g

FOR MORE INFORMATION on the new products and equipment mentioned in this section, fill in this form and return to us. It will receive prompt attention.

Circle numbers below corresponding to those of items in which you are interested:

9146	9334	9351
9453	9379	9251
9398	9244	9255
9169	9353	9400
9345	9342	9403
9348	9349	9392
9377	9356	9390
9236		9385

7-8-46

NAME ..... TITLE .....

COMPANY .....

PRODUCTS MADE .....

STREET .....

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Mail to: STEEL, Engineering Dept.—1213 West Third St., Cleveland 13, Ohio

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on this page.)

New Metal Melting Furnace

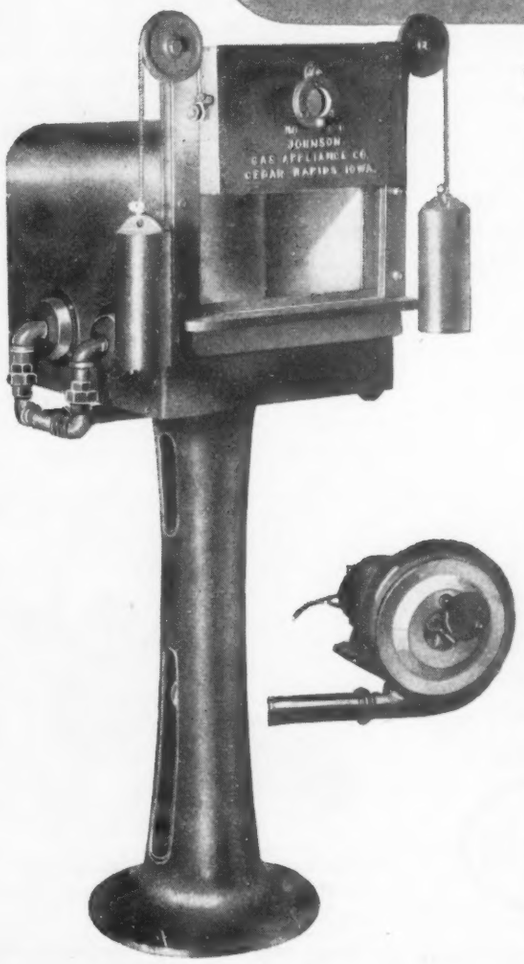
CUTS MELTING TIME IN HALF

JOHNSON NO. 616

Designed to save time and gas, this new Johnson melting furnace offers unusual efficiency and economy in melting such metals as lead, babbitt, tin, zinc, aluminum and type metal. Melts 600 pounds of lead in 20 minutes! Equipped with powerful Johnson direct jet burners, each having independent shut-off control. Permits use of 6 burners to develop pot temperature, 3 burners to hold temperature. No forced air blast required. Heavy insulation retains heat and minimizes operator fatigue. Low in original cost and upkeep. Write for details on the Johnson No. 616.

$130.00
F.O.B. FACTORY

MORE HEAT FOR YOUR DOLLAR



with *Quick Acting* Johnson Furnaces

JOHNSON Hi-Speed No. 130A For LOW COST heat-treating high speed steels, dies and tools

Turn on the heat and you're ready for action. Johnson No. 130A Hi-Speed Furnace reaches operating temperatures FAST to save time and gas. Designed for heat-treating high speed steels, dies and tools. Gets the job done before conventional furnace warms up. Available with 4 Burners for steels requiring 1400-2350° F. or with 6 Burners for 1800-2400° F. Counterbalanced door opens upwards. Firebox 7¾ x 13 x 16½ lined with high temperature insulating refractory. Complete with Carbofrax Hearth, G. E. Motor and Johnson Blower.

4-Burner . . . $295.00

6-Burner . . . $325.00

F.O.B. FACTORY

Get *Quick Action* with Johnson Units

Famous for economy and efficiency since 1901, Johnson Furnaces cut costs three ways . . . save time, save space, save gas. Write for literature describing furnaces for all pot-hardening, melting, annealing and heat-treating purposes

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JOHNSON GAS APPLIANCE CO.
573 E. Avenue N. W., Cedar Rapids, Iowa

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Address_____

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No. 9 IN A SERIES... *Some helpful answers to industrial lubrication problems...*

"PENOLA PRESCRIPTIONS"

THE PROBLEM... A machine shop, equipped with a precision regrinder had difficulty with crank-shaft work because of deficiencies in the soluble oil emulsion used. There was excessive mist during grinding to which the operator objected. The emulsion produced an offensive odor; the 36-inch grinding wheel temperature ran high; and above all, the finish was not up to precision standards. Minute corroded areas were not uncommon because of the inability of the soluble oil in the emulsion to give needed rust protection.

THE DIAGNOSIS... A Penola Engineer suggested the use of a soluble oil that would eliminate these difficulties and, if possible, reduce production cost.

THE PRESCRIPTION...

℞ Kutwell 40

with 4.5 parts of water—helped produce corrosion-free surfaces ... reduced the mist and odor so that they were not objectionable ... provided a cooler running wheel ... saved time in the preparation of the emulsion ... and reduced the soluble oil cost by one-half!

PENOLA LUBRICANTS

CHICAGO, ILLINOIS • NEW YORK • DETROIT • ST LOUIS

Penola Reg. U.S. Pat. Off.

PENOLA PRODUCTS HAVE MEANT EXTRA PROTECTION SINCE 1885

samples permitting full range use in analyzing carbon in iron, steel, heat resisting steel, stainless steel, and other materials.

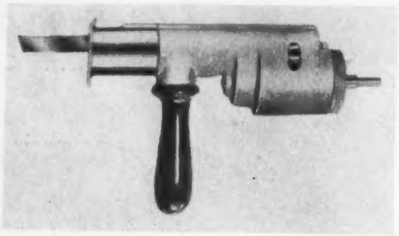
Absorption chamber permits complete absorption in two passes although one is sufficient for many alloys. Chamber combines use of glass tubing and glass beads for quick, thorough gas dispersion.

Panel mountings preclude necessity for clamps. Pyrex glassware is utilized to minimize breakage.

Steel 7/8/46; *Item No.* 9403

High Speed Saw

Utilizing ordinary hack saw blades or standard ¼-in. shank machine files, the new Wyco high speed saw, manufactured by Wyzenbeek & Staff, Inc., 838 West Hubbard street, Chicago, will



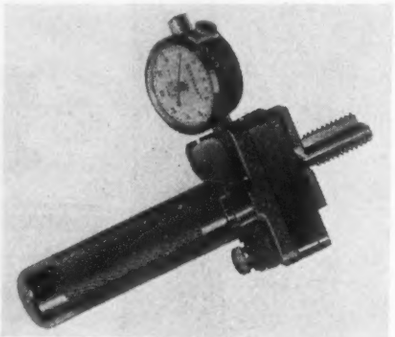
saw and file all metals, wood and plastic. It may be attached to any ¼-in. electric drill, air drill or flexible shaft and it chucks in drill chuck or collet.

True sawing is assured by square plunger with takeup for wear. All rotating parts have ball bearings running in oil, and are heat-treated. Unit uses no gears or cams.

Steel 7/8/46; *Item No.* 9392

Thread Gage

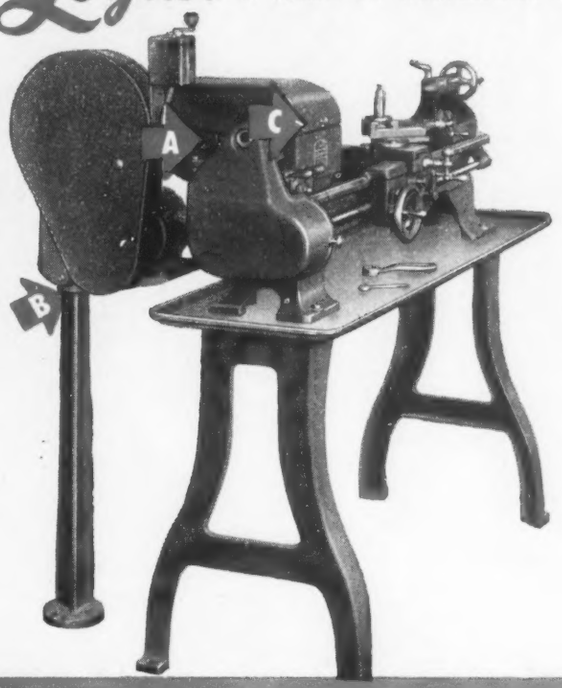
Bryant Chucking Grinder Co., Springfield, Vt., is announcing a portable thread gage which provides for inspection of internal threads in parts where bench inspection is inconvenient or



while parts are still in machine. It has added advantage of showing out-of-round conditions.

Gage has three thread segments, two

Logan A NAME TO REMEMBER WHEN YOU THINK OF BETTER LATHES



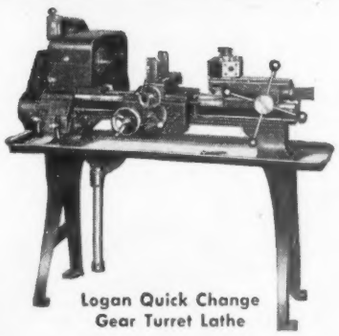
where 5 rubber cushions assure smooth operation in Logan Lathes

A **TWO RUBBER CUSHIONED BEARINGS,** one at each end of the two hinge points connecting the countershaft and headstock, absorb motor vibration.

B **ONE RUBBER CUSHION** between motor mounting base and pedestal further eliminates transmission of motor vibration.

C **TWO RUBBER BUTTONS** cushion the cone pulley guard.

RUBBER CUSHIONED COUNTERSHAFT



Logan Quick Change Gear Turret Lathe

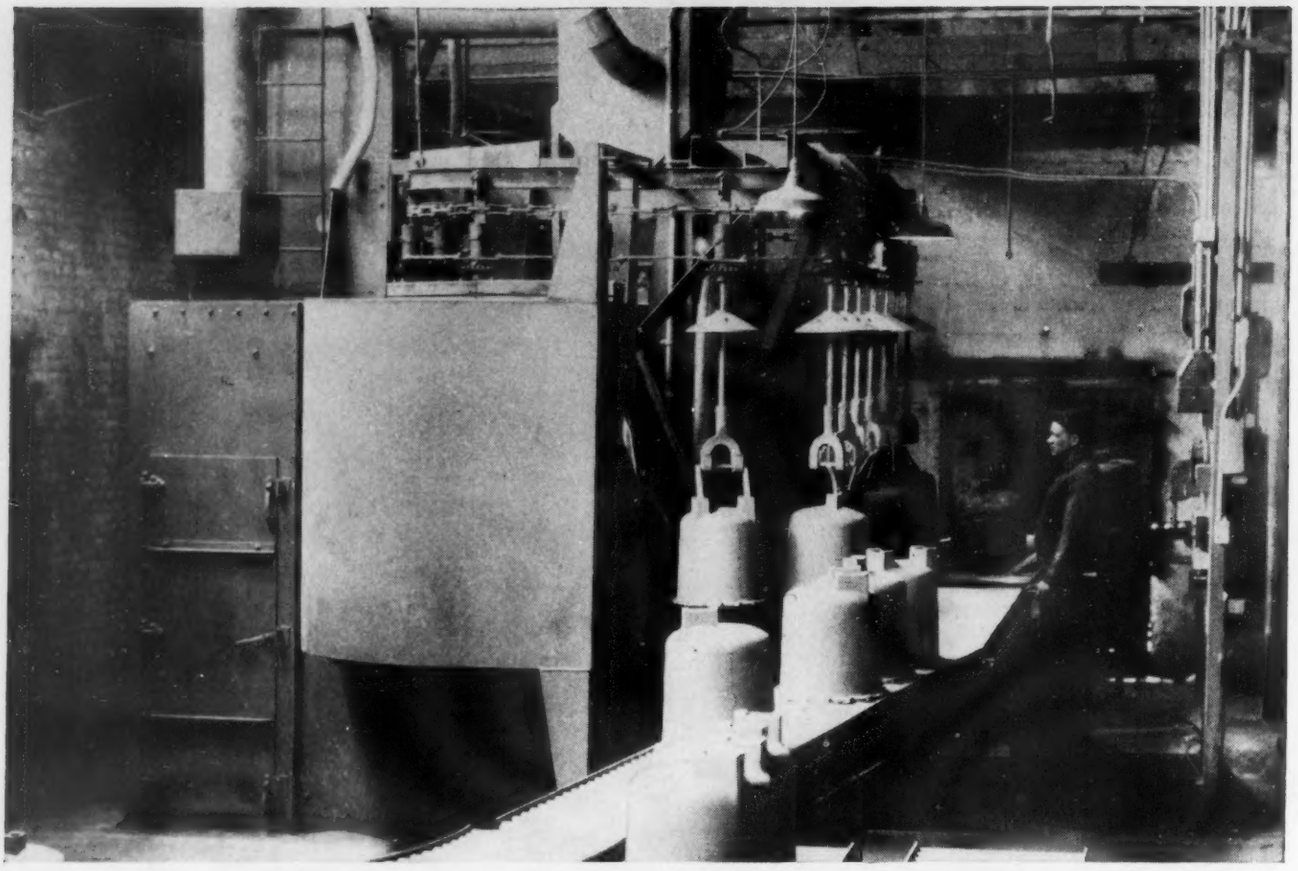
SPECIFICATIONS COMMON TO ALL LOGAN LATHES . . . swing over bed, 10½" . . . bed length, 43⅛" . . . size of hole through spindle, 25/32" . . . spindle nose diameter and threads per inch, 1½"—8 . . . 12 spindle speeds, 30 to 1450 rpm . . . motor, ½ hp, 1750 rpm . . . ball bearing spindle mounting . . . drum type reversing motor switch and cord . . . precision ground ways, 2 V-ways and 2 flat ways.

ABSORBS VIBRATION, GIVES LOGAN LATHES MAXIMUM SMOOTHNESS AND ACCURACY IN OPERATION

Rubber cushioning of the countershaft is one of the unique design features which help make Logan Lathes outstanding in smooth, accurate operation. At no point on the Logan Lathe is there a direct metal-to-metal contact between countershaft and headstock. At all three of the countershaft's main support points, the pedestal rod and the two hinge pins, rubber cushions effectively absorb motor vibration. The result is a maximum of smoothness in operation that is conducive to fine precision work. For details on all the Logan advanced design features, see your nearby Logan Lathe dealer, or write direct for the Logan Lathe catalog.

K-1

LOGAN ENGINEERING CO. CHICAGO 30, ILLINOIS



WHEELABRATOR

solves the most difficult cleaning problems

When work to be cleaned is of unusual size, shape or weight, or when special production requirements prevail, an Airless Wheelabrator Special Cabinet is the economical and efficient answer to the problem. AMERICAN has made a specialty of designing special machines.

Special Wheelabrator Cabinets are designed to completely expose the work to the blast of one or more Wheelabrator units so that all areas to be reached by the blast stream are perfectly cleaned.

The success of AMERICAN special designs and the preference accorded them by the trade is due to these two important factors: (1) our designing engineers are able to draw upon a rich fund of practical metal cleaning experience by reason of their having dealt with practically every type of cleaning problem; (2) the design of the machine is preceded by thorough studies of the cleaning problem, both at the customer's plant and in our factory testing laboratory.

By so doing, every important design factor can be accurately checked in advance, such as: the position of the Wheelabrator unit in relation to the work; the size and speed of the Wheelabrator; the method of conveying the work through the blast stream to obtain proper exposure of all areas; the duration of exposure; etc. When the answers to these problems are obtained the work of the designing engineer is greatly simplified.

When you have a perplexing or difficult cleaning problem bring it to AMERICAN. Our engineers will be glad to give you the benefit of their recommendations without the slightest obligation to you.

American
FOUNDRY EQUIPMENT CO.
509 SOUTH BYRKIT STREET MISHAWAKA, IND.

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

stationary and one attached to a movable arm. Movable segment retracts to form a pilot which can be inserted into work without thread interference. Releasing operating lever engages segments with all internal threads and a partial turn of gage inspects all of threads. Overall accuracy or accumulated inaccuracies of lead, pitch diameter and thread form or presence of burrs are indicated.

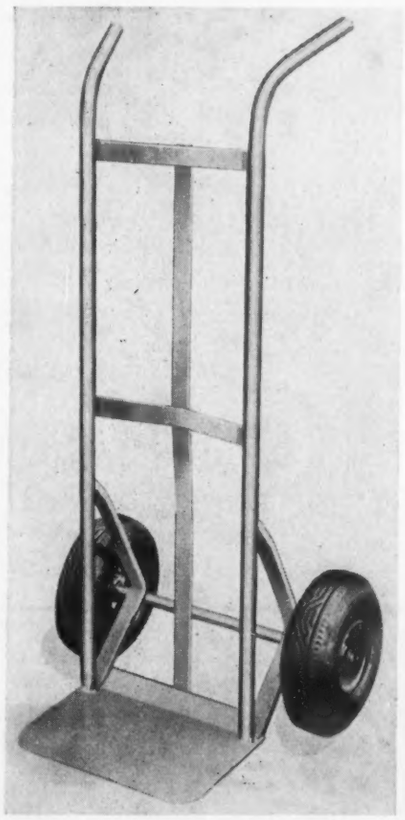
Inspection of different sized threads is accomplished by changing segments. New segments are aligned by setting to a master ring gage.

Steel 7/8/46; *Item No.* 9390

Hand Truck

A Wheel-Ezy plate nose hand truck is announced by Rapids-Standard Co. Inc., Grand Rapids, Mich., featuring a solid nose which enables it to better handle cases, kegs and bags. It has an arc-welded, one-piece frame of 500 lb capacity.

Wheel hub contains only five simple parts, all of which are plated to resist rust and corrosion. Truck has two 10 x



3.50 in. pneumatic tires. Axle sleeve has a grease groove on outer side which connects to axle hole through a drilled hole.

Trucks have an overall height of 46 in., a width of 20 in. In addition to pneumatic wheels, steel, resinoid and molded rubber wheels are offered.

Steel 7/8/46; *Item No.* 9385

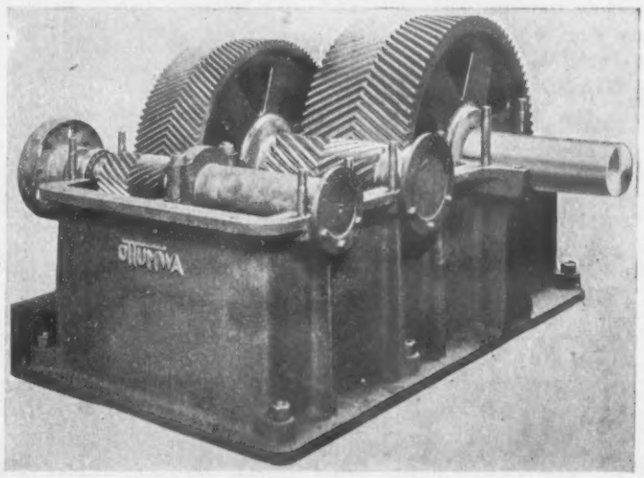
SEVENTY SIX YEARS OF EFFORT

In the manufacture of gears have led us to this conclusion . . . . . .

The Sykes gear generator has overcome all the difficulties inherent in other processes for cutting double helical gears, and the Sykes generated continuous tooth herringbone gear represents the most economical method yet devised of transmitting power between shafts whose axes are parallel.

Here at OTTUMWA we cut Sykes continuous tooth herringbone gears in all sizes from the smallest up to 10'2" diameter, 24" face. We manufacture gears complete in steel or semi-steel or we cut blanks furnished by customers.

OTTUMWA-Sykes continuous tooth herringbone SPEED REDUCERS are furnished in single, double and triple reduction. They are sufficiently rugged to have an intermittent overload rating of 100%. In addition to a complete line of standard gear reduction units in ratios 2 to 1 to 200 to 1, we are prepared to build special units of any size. Write for the instructive OTTUMWA catalog.



E S T A B L I S H E D 1 8 6 7

OTTUMWA
IRON WORKS

ENGINEERS • FOUNDERS • MACHINISTS.

OTTUMWA, IOWA, U. S. A.

the BUSINESS TREND

SUBSTANTIAL gains in automobile assemblies, continued improvement in steelmaking operations and strength in carloadings and electric power output pushed STEEL's index of industrial activity to another postwar high for the week ended June 29. The index, at 141 per cent (preliminary) of the 1936-39 average, represented a gain of 6 points over the preceding week, which at 135 marked a postwar high at that time.

Prospects are the index will continue to push into higher ground during the second half of the year and soon should pass 150.

Outlook for both materials supply and for labor peace is better than during the first half. Steel production at present levels will permit considerable expansion of production by steel consuming industries during the next six months. Major labor disputes have been settled and contracts generally run through the remainder of the year.

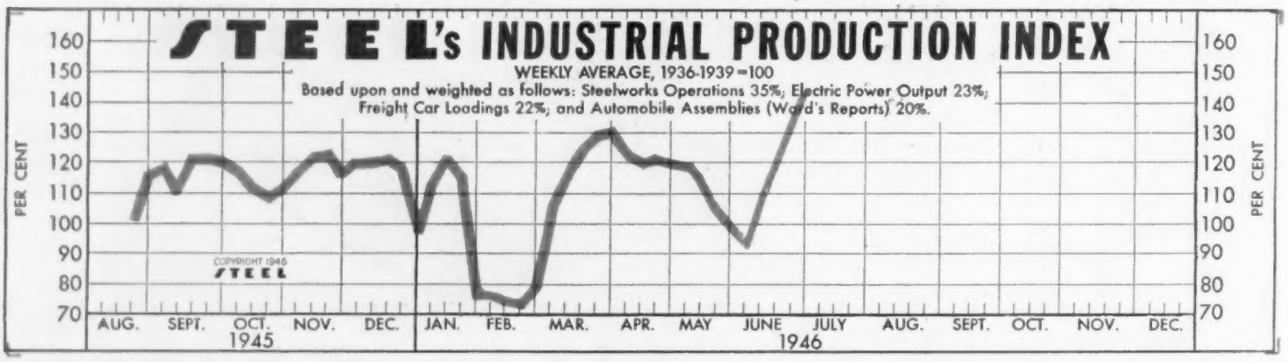
AUTOMOBILES: Assemblies of passenger cars and trucks are on the upgrade and estimates for third quarter production center around 1,100,000 units. For the fourth quarter, production of about 1,500,000 units is anticipated, barring deterioration in the parts and materials supply picture and now unforeseen labor difficulties. The indicated 2,600,000 total for the last half would compare with slightly more than 1,000,000 units produced in the past six months.

BUILDING—Construction contracts totaling $952,418,000 were awarded during May in 37 eastern states, according to F. W. Dodge Corp. This compares with $734,911,000 awarded in April, and brings the total for the first five months to $3,129,822,000. Included in the May awards were $463,600,000 of residential building contracts and $290,963,000 nonresidential building. Public works accounted for $156,626,000 and utilities for $41,229,000.

RAILROADS—Volume of freight traffic handled by Class 1 railroads in May amounted to 38 billion ton-miles. This represents a decrease of about 41 per cent from May, 1945, and reflects in large measure the soft coal strike. Revenue ton-miles of service performed by the carriers in the first five months of 1946 dropped 27 per cent under 1945.

FOUNDRY EQUIPMENT—Net orders closed for new foundry equipment during May were 621.7 per cent of the monthly average in 1937-39, according to the Foundry Equipment Manufacturers Association. For repairs, the May index was 426.2; for total sales, 577.3.

PETROLEUM—Crude oil consumption in 1946 is expected to equal last year's consumption and exceed that of 1941 by 20 per cent, according to Cities Service Co. Gasoline demand for this year is running 15 per cent above 1941 while heavy and light oil use is 30 per cent greater.



The Index (see chart above): **Latest Week (preliminary) 141** **Previous Week 135** **Month Ago 94**

FIGURES THIS WEEK

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)‡	88	85	43	92
Electric Power Distributed (million kilowatt hours)	4,150†	4,129	3,741	4,353
Bituminous Coal Production (daily av.—1000 tons)	1,973	2,023	1,305	1,935
Petroleum Production (daily av.—1000 bbls.)	4,950†	4,949	4,756	4,903
Construction Volume (ENR—Unit $1,000,000)	$128.6	$105.8	$71.9	$46.5
Automobile and Truck Output (Ward's—number units)	64,795	54,475	31,895	19,115

* Dates on request. † Preliminary. ‡ 1946 weekly capacity is 1,762,381 net tons. 1945 weekly capacity was 1,831,636 net tons.

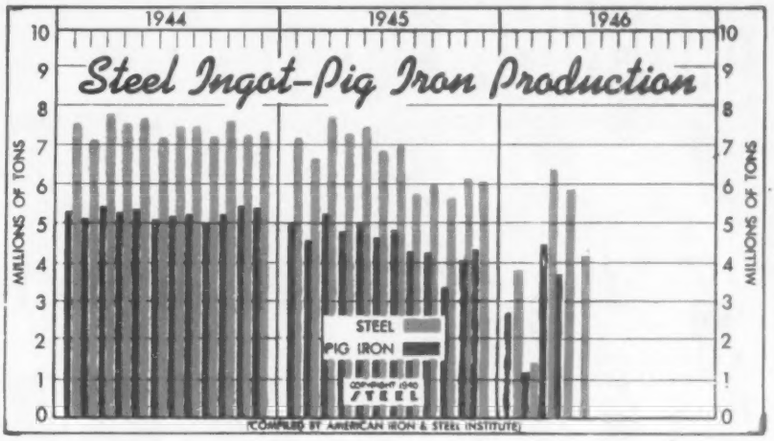
TRADE				
Freight Carloadings (unit—1000 cars)	865†	858	627	894
Business Failures (Dun & Bradstreet, number)	14	25	18	14
Money in Circulation (in millions of dollars)‡	$28,135	$28,116	$28,106	$26,628
Department Store Sales (change from like week a year ago)‡	+35%	+37%	+34%	+21%

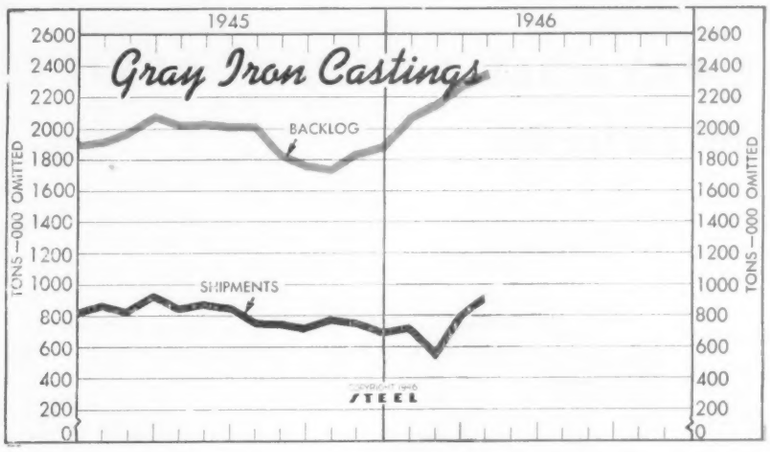
† Preliminary. ‡ Federal Reserve Board.

Iron, Steel Production

(Net Tons—000 omitted)

	Steel Ingots			Pig Iron	
	1946	1945	1944	1946	1945
Jan.	3,872	7,206	7,593	2,645	4,945
Feb.	1,393	6,655	7,194	1,148	4,563
Mar.	6,507	7,708	7,826	4,424	5,228
Apr.	5,860	7,292	7,594	3,614	4,786
May	4,073	7,452	7,703	....	5,016
June	....	6,842	7,234	....	4,605
July	....	6,987	7,498	....	4,812
Aug.	....	5,736	7,499	....	4,249
Sept.	....	5,983	7,235	....	4,227
Oct.	....	5,598	7,621	....	3,388
Nov.	....	6,201	7,279	....	4,026
Dec.	....	6,059	7,366	....	4,323
Total	....	79,719	89,642	....	54,167





Gray Iron Castings

(U. S. Bureau of Census)

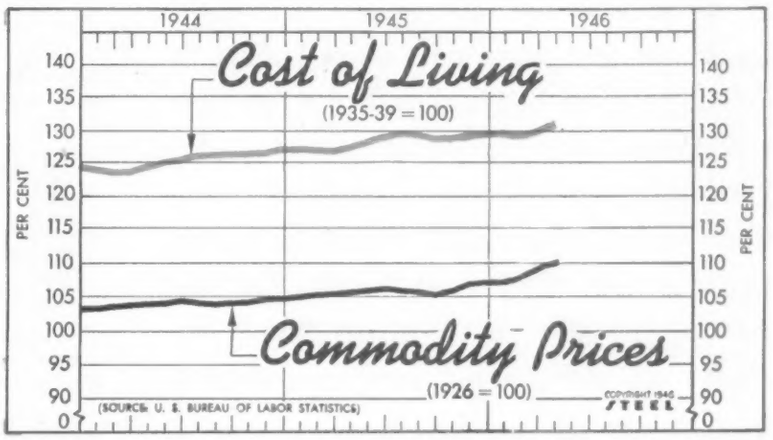
Tons—000 omitted

	Shipments		Backlogs*	
	1946	1945	1946	1945
Jan.	706	862	2,077	1,922
Feb.	541	816	2,153	1,998
Mar.	796	928	2,265	2,089
Apr.	857	843	2,378	2,032
May	....	867	....	2,031
June	....	849	....	2,016
July	....	749	....	2,015
Aug.	....	750	....	1,818
Sept.	....	718	....	1,755
Oct.	....	767	....	1,742
Nov.	....	751	....	1,847
Dec.	....	678	....	1,877
Mo. Ave.	....	798	....	1,928

*Unfilled orders for sale to the trade.

Wholesale Commodity Price—Cost of Living Indexes

	Commodities (1926=100)			Living Cost (1935-39=100)		
	1946	1945	1944	1946	1945	1944
Jan.	107.1	104.9	103.3	129.9	127.1	124.2
Feb.	107.7	105.2	103.6	129.6	126.9	123.8
Mar.	108.9	105.3	103.8	130.2	126.8	123.8
Apr.	110.2	105.7	103.9	130.9	127.1	124.6
May	....	106.0	104.0	....	128.1	125.1
June	....	106.1	104.3	....	129.0	125.4
July	....	105.9	104.1	....	129.4	126.1
Aug.	....	105.7	103.9	....	129.3	126.4
Sept.	....	105.2	104.0	....	128.9	126.5
Oct.	....	105.9	104.1	....	128.9	126.5
Nov.	....	106.8	104.4	....	129.3	126.6
Dec.	....	107.1	104.7	....	129.9	127.0
Ave.	....	105.8	104.0	....	128.4	125.5



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$12,435	$13,997	$10,632	$12,745
Federal Gross Debt (billions)	$269.2	$269.3	$273.0	$256.9
Bond Volume, NYSE (millions)	$18.3	$21.4	$16.0	$46.0
Stocks Sales, NYSE (thousands)	5,108	5,834	7,247	11,324
Loans and Investments (billions)†	$62.5	$62.9	$64.2	$63.0
United States Government Obligations Held (millions)†	$44,324	$45,716	$45,965	$46,334

† Member banks, Federal Reserve System.

PRICES

STEEL's composite finished steel price average	$64.45	$64.45	$63.54	$58.27
All Commodities†	112.4	111.8	110.7	105.9
Industrial Raw Materials†	126.0	125.8	124.2	118.6
Manufactured Products†	107.7	106.8	106.2	102.0

† Bureau of Labor Statistics Ondex, 1926 = 100.

9 OUT OF 10 *want* THE PAYROLL SAVINGS PLAN CONTINUED!

Thanks to the cooperation and encouragement of America's industrial executives, 85 million bond holders have bought U.S. Bonds in the greatest savings program in history. Employees who have purchased billions of dollars of these bonds during the war now want to continue monthly purchases of savings bonds. Specific evidence of this desire to continue saving for personal security and prosperity through the Payroll Savings Plan was recently revealed by a survey which disclosed that 90% wanted the Plan continued.

Every employer can write in his own set of reasons why the Payroll Savings Plan should be continued as a part of his personnel relations program, but the principal advantages are obvious:

A large reservoir of national savings; a strong and stable bulwark against inflation.

An "automatic" thrift habit for the worker; to increase contentment and satisfaction in his job.

An opportunity for the employee to maintain his "share in America" with the safest, easiest, most profitable investment he can make.

An opportunity for the returned veteran to share in the Payroll Plan's varied benefits.

Your employees will require little "selling" on the idea—they are accustomed to their monthly saving habit. With the Treasury Department's savings bond program now in peacetime operation, your partnership is again invited to continue this systematic, convenient means of contribution to a prosperous peacetime future.

The Treasury Department acknowledges with appreciation the publication of this message by

STEEL

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and Advertising Council

MARKET SUMMARY

Steel Prices Hold Steady As Controls Are Removed

No signs of runaway market appear . . . Some pig iron prices raised . . . Mills continue shipments at old prices

FOLLOWING the lapse of Office of Price Administration at the end of June steel prices have held steady, a conservative attitude being taken in all directions. Some adjustments undoubtedly will be made later and, in fact, some were under consideration before the end of OPA. However, nothing suggestive of a runaway market in steel is in prospect, whether or not price control eventually is revived.

At the time of the last general increase, about $5 per ton, in February, higher prices had been sought by the industry to meet a succession of increased costs. Since then there have been still further increases as a result of higher fuel costs and freight rates, among other factors. It appears that whatever price adjustments eventually are made they will be moderate and apply mainly to especially high cost items.

A point of great pressure is in scrap, which is especially scarce but the attitude of the trade last week was to hold the line and prevent any major increases in price until the situation is clarified. Contracts continued to be made and material shipped at the ceiling prices prevailing at the time OPA ceased to function.

While contracts were actually nullified by termination of OPA control steel producers continue to ship against commitments and to accept orders on the basis of price prevailing at time of shipment. In many lines new business is limited by the fact that mills are sold to the end of the year and have not opened books for next year.

In some quarters an early advance is expected in pig iron as OPA had been considering approval of a higher price, offering $1 to $2 increase, with producers contending for a larger increase at the time the pricemaking agency ceased to function. One southern iron producer had increased pig iron prices $4 per ton with OPA permission, effective June 19, and another southern interest last week raised its price $3 per ton, effective July 2. Other southern producers have not taken action. One of the final acts of OPA was to allow an increase of $1.35 per ton on by-product coke. Connellsville beehive coke producers have advanced prices $1.25 per ton on machine-drawn and $1.35 on hand-drawn furnace and foundry grades.

Steelmakers continue to operate at the highest rate possible and in some items are making some impression on heavy order backlogs. Structural shapes are being manufactured in an increasing volume and deliveries are being improved somewhat. Production of nails is being enlarged to some degree and in all lines an improvement is seen, though mills are loaded with orders to take up all their production for the remainder of the year, except in an occasional instance. Principal handicap to capacity operation is shortage of scrap and pig iron, though the latter is being eased by relighting of additional furnaces each week. Pig iron is being distributed to best advantage possible but is not in sufficient supply yet to meet needs of foundries and steel mills.

Estimated national steelmaking rate last week remained stationary at 88 per cent of capacity. Observance of Independence Day had little effect, most mills continuing with small interruption. The rate of production from now on probably will change slowly as conditions develop. The heated term normally brings some lowering of efficiency and raw material shortages will have further effect. Pittsburgh continued its rise by advancing 3½ points to 97 per cent and Wheeling gained 5 points to 90½. Cleveland dropped 1½ points to 89, Cincinnati 5 points to 81, Youngstown 2 points to 84, Detroit off 5 points to 85 and New England 40 points to 45. Rates were unchanged as follows: Chicago 88, eastern Pennsylvania 85, Birmingham 99, St. Louis 84½, Buffalo 88½, West Coast 84.

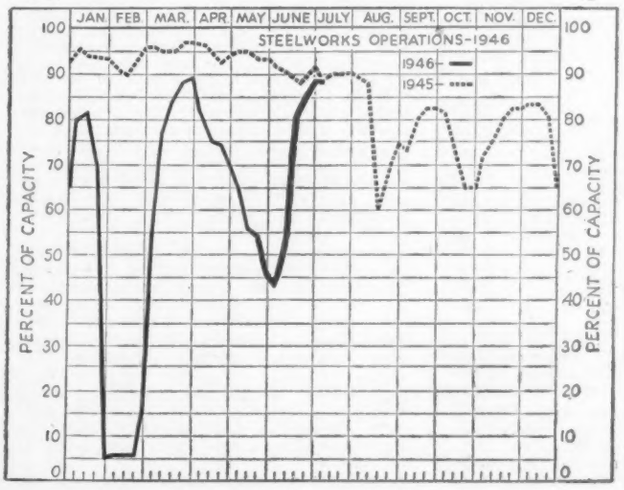
With former Office of Price Administration ceilings still being observed, as producers have made no advances in the interim period, average composite prices are unchanged. Finished steel composite is $64.45, semifinished steel $40.60, steelmaking pig iron $25.50 and steelmaking scrap $19.17.

DISTRICT STEEL RATES

(Percentage of Ingot Capacity Engaged in Leading Districts)

	Week Ended July 6	Change	Same Week 1945	Same Week 1944
Pittsburgh	97	+3.5	87	88
Chicago	88	None	88	99.5
Eastern Pa.	85	None	86	95
Youngstown	84	—2	90	96
Wheeling	90.5	+5	80.5	101
Cleveland	89	—1.5	76	92.5
Buffalo	88.5	None	79	90.5
Birmingham	99	None	95	95
New England	45	—40	85	88
Cincinnati	81	—5	91	86
St. Louis	84.5	None	75	79.5
Detroit	85	—5	80	86
Estimated national rate	88	None	88.5	96

Based on weekly steelmaking capacity of 1,762,381 net tons for 1946; 1,831,636 tons for 1945; 1,791,287 tons for 1944.



COMPOSITE MARKET AVERAGES

	July 6	June 29	June 22	One Month Ago June, 1946	Three Months Ago April, 1946	One Year Ago July, 1945	Five Years Ago July, 1941
Finished Steel	$64.45	$64.45	$64.45	$64.09	$63.54	$58.27	$56.73
Semifinished Steel	40.60	40.60	40.60	40.60	40.60	37.80	36.00
Steelmaking Pig Iron	25.50	25.50	25.50	25.50	25.50	24.00	23.00
Steelmaking Scrap	19.17	19.17	19.17	19.17	19.17	19.17	19.17

Finished Steel Composite:—Average of industry-wide prices on sheets, strips, bars, plates, shapes, wire, nails, tin plate, standard and line pipe. Semifinished Steel Composite:—Average of industry-wide prices on billets, slabs, sheet bars, skelp and wire rods. Steelmaking Pig Iron Composite:—Average of basic pig iron prices at Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Neville Island, Granite City and Youngstown. Steelworks Scrap Composite:—Average of No. 1 heavy melting steel prices at Pittsburgh, Chicago and eastern Pennsylvania. Finished steel, net tons; others, gross tons.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished material (except tin plate) and wire rods, cents per lb; coke, dollars per net ton; others dollars per gross ton.

Finished Material

	July 6, 1946	June, 1946	Apr., 1946	July, 1945
Steel bars, Pittsburgh	2.50c	2.50c	2.50c	2.25c
Steel bars, Philadelphia	2.86	2.82	2.82	2.57
Steel bars, Chicago	2.50	2.50	2.50	2.25
Shapes, Pittsburgh	2.45	2.45	2.45	2.10
Shapes, Philadelphia	2.48	2.465	2.465	2.215
Shapes, Chicago	2.35	2.35	2.35	2.10
Plates, Pittsburgh	2.50	2.50	2.50	2.25
Plates, Philadelphia	2.558	2.55	2.55	2.30
Plates, Chicago	2.50	2.50	2.50	2.25
Sheets, hot-rolled, Pittsburgh	2.425	2.425	2.425	2.20
Sheets, cold-rolled, Pittsburgh	3.275	3.275	3.275	3.05
Sheets, No. 24 galv., Pittsburgh	4.05	4.05	4.05	3.70
Sheets, hot-rolled, Gary	2.425	2.425	2.425	2.20
Sheets, cold-rolled, Gary	3.275	3.275	3.275	3.05
Sheets, No. 24 galv., Gary	4.05	4.05	4.05	3.70
Hot-rolled strip, over 6 to 12-in., Pitts.	2.35	2.35	2.35	2.10
Cold-rolled strip, Pittsburgh	3.05	3.05	3.05	2.80
Bright basic fence wire, Pittsburgh	3.05	3.05	3.05	2.75
Wire nails, Pittsburgh	3.75	3.55	3.25	2.90
Tin plate, per base box, Pittsburgh	$5.25	$5.25	$5.25	$5.00

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$38.00	$38.00	$38.00	$36.00
Slabs, Pittsburgh, Chicago	39.00	39.00	39.00	36.00
Rerolling billets, Pittsburgh	39.00	39.00	39.00	36.00
Wire rods, No. 5 to ⅜-inch, Pitts.	2.30c	2.30c	2.30c	2.15c

Pig Iron

	July 6, 1946	June, 1946	Apr., 1946	July, 1945
Bessemer del. Pittsburgh	$27.69	$27.69	$27.69	$26.19
Basic, Valley	26.00	26.00	26.00	24.50
Basic, eastern del. Philadelphia	27.93	27.84	27.84	26.34
No. 2 fdry., del. Pgh. N. & S. sides	27.19	27.19	27.19	25.69
No. 2 foundry, Chicago	26.50	26.50	26.50	25.00
Southern No. 2, Birmingham	22.88	22.88	22.88	21.38
Southern No. 2 del. Cincinnati	26.94	26.94	26.94	25.44
No. 2 fdry., del. Philadelphia	28.43	28.34	28.34	26.84
Malleable, Valley	26.50	26.50	26.50	25.00
Malleable, Chicago	26.50	26.50	26.50	25.00
Charcoal, low phos., fob Lyles, Tenn.	33.00	33.00	33.00	33.00
Gray forge, del. Pittsburgh	26.69	26.69	26.69	25.19
Ferromanganese, del. Pittsburgh	140.00	140.00	140.00	140.33

Scrap

Heavy melting steel, No. 1, Pittsburgh	$20.00	$20.00	$20.00	$20.00
Heavy melt. steel, No. 2, E. Pa.	18.75	18.75	18.75	18.75
Heavy melting steel, Chicago	18.75	18.75	18.75	18.75
Rails for rolling, Chicago	22.25	22.25	22.25	22.25
No. 1 cast, Chicago	20.00	20.00	20.00	20.00

Coke

Connellsville, furnace ovens	$8.75	$7.50	$7.50	$7.50
Connellsville, foundry ovens	9.50	8.25	8.25	8.25
Chicago, by-product fdry., del.	15.10	13.75	13.75	13.35

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Finished steel quoted in cents per pound and semifinished in dollars per gross ton, except as otherwise noted. Delivered prices do not include the 3 per cent federal tax on freight. Pricing on rails was changed to net ton basis as of Feb. 15, 1946.

Semifinished Steel

Carbon Steel Ingots: Fob mill base, rerolling quality, standard analysis, $33.

Alloy Steel Ingots: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon; uncrop, $48.69.

Rerolling, Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Sparrows Point, Birmingham, Youngstown, $39; Detroit, del., $41; Duluth (billets), $41; Pac. ports (billets), $51 (Andrews Steel Co., carbon slabs, $41; Northwestern Steel & Wire Co., $41, Sterling, Ill.; Granite City Steel Co., $47.50 gross ton slabs from D.P.C. mill. Geneva Steel Co., $58.64, Pac. ports.)

Forging Quality Blooms, Slabs, Billets: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, Youngstown, $47; Detroit, del., $49; Duluth, billets, $49; forging billets fob Pac. ports, $59.
(Andrews Steel Co. may quote carbon forging billets $50 gross ton at established basing points; Follansbee Steel Corp., $49.50 fob Toronto, O.; Geneva Steel Co., $64.64, Pacific ports.)

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $58.43; del. Detroit $60.43; eastern Mich. $61.43.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Sparrows Point, Youngstown, $38. (Empire Sheet & Tin Plate Co., Mansfield, O., carbon sheet bars, $39, fob mill.)

Skelp: Pittsburgh, Chicago, Sparrows Point, Youngstown, Coatesville, lb, 2.05c.

Wire Rods: Pittsburgh, Chicago, Cleveland, Birmingham, No. 5—⅜ in. inclusive, per 100 lb, $2.30. Do., over ⅜—41/64-in., incl., $2.45; Galveston, base, $2.40 and $2.55, respectively. Worcester add $0.10; Pacific ports $0.50.

Bars

Hot-Rolled Carbon Bars and Bar-Size Shapes under 3-in.: Pittsburgh, Youngstown, Chicago, Gary, Cleveland, Buffalo, Birmingham base, 20 tons one size, 2.50c; Duluth, base, 2.60c; Detroit, del., 2.60c; eastern Mich., 2.65c; New York, del., 2.84c; Phila., del., 2.86c; Gulf ports, dock, 2.85c; Pac. ports, dock, 3.15c. (Sheffield Steel Corp. may quote 2.75c, fob St. Louis; Joslyn Mfg. & Supply Co., 2.55c, fob Chicago.)

Rail Steel Bars: Same prices as for hot-rolled carbon bars except base is 5 tons.

Hot-Rolled Alloy Bars: Pittsburgh, Youngstown, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 2.921c; Detroit, del., 3.021c. (Texas Steel Co. may use Chicago base price as maximum fob Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

AISI Series	(*Basic O-H)	AISI Series	(*Basic O-H)
1300	$0.108	4300	$1.839
2300	1.839	4600	1.298
2500	2.759	4800	2.326
3000	0.541	5100	0.379
3100	0.920	5130 or 5152	0.494
3200	1.461	6120 or 6152	1.028
		6145 or 6150	1.298
3400	3.462	8612	0.703
4000	0.487	8720	0.757
4100 (.15-.25 Mo)	0.757	9830	1.407
(.20-.30 Mo)	0.812		

* Add 0.25 for acid open-hearth; 0.50 electric.

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 20,000-39,999 lb, 3.10c; Detroit, 3.15c; Toledo, 3.25c.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 3.625c; Detroit, del., 3.725c, eastern Mich., 3.755c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base, 2.35c; Detroit, del., 2.45c; eastern Mich. and Toledo, 2.50c; Gulf ports, dock, 2.70c; Pacific ports, dock, 2.75c.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Buffalo, base, 2.35c; Detroit, del., 2.45c; eastern Mich. and Toledo, del., 2.50c; Gulf ports, dock, 2.70c.

Iron Bars: Single refined, Pitts., 4.76c; double refined, 5.84c; Pittsburgh, staybolt, 6.22c; Terre Haute, single ref., 5.42c; double ref., 6.76c.

Sheets, Strip

Hot-Rolled Sheets: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown, Sparrows Pt., Middletown, base, 2.425c; Granite City, base, 2.525c; Detroit, del., 2.525c; eastern Mich. del., 2.575c; Phila., del., 2.615c; New York, del., 2.685c; Pacific ports, 2.975c. (Andrews Steel Co. may quote hot-rolled sheets for shipment to the Detroit area on the Middletown, O., base; Alan Wood Steel Co., Conshohocken, Pa., may quote 2.60c. on hot carbon sheets, nearest eastern basing point.)

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.275c; Granite City, base, 3.375c; Detroit, del., 3.375c; eastern Mich., del., 3.425c; New York, del., 3.615c; Phila., del., 3.635c; Pacific ports, 3.925c.

Galvanized Sheets, No. 24: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Youngstown, Sparrows Point, Middletown, base, 4.05c; Granite City, base, 4.15c; New York, del., 4.31c; Phila., del., 4.24c; Pacific ports, 4.60c.

Corrugated Galv. Sheets: Pittsburgh, Chicago, Gary, Birmingham, 29-gage, per square, 3.73c.

Culvert Sheets: Pittsburgh, Chicago, Gary, Birmingham, 16-gage not corrugated, copper alloy, 4.15c; Granite City, 4.25c; Pacific ports, 4.60c; copper iron, 4.50c; pure iron, 4.50c; zinc-coated, hot-dipped, heat-treated, No. 24, Pittsburgh, 4.60c.

Aluminized Sheets, 20 gage: Pittsburgh, hot-dipped, coils or cut to lengths, 9.00c.

Enameling Sheets: 10-gage; Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, base 3.20c; Granite City, base 3.30c; Detroit, del., 3.30c; eastern Mich., 3.35c; Pacific ports, 3.85c; 20-gage: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, base, 3.80c; Detroit, del., 3.90c; eastern Mich., 3.95c; Pacific ports, 4.45c.

Electrical Sheets No. 24:

	Pittsburgh Base	Pacific Ports	Granite City
Field grade	3.90c	4.65c	4.00c
Armature	4.25c	5.00c	4.35c
Electrical	4.75c	5.50c	4.85c
Motor	5.425c	6.175c	5.525c
Dynamo	6.125c	6.875c	6.225c
Transformer			
72	6.625c	7.375c	.....
65	7.625c	8.375c	.....
58	8.125c	8.875c	.....
52	8.925c	9.675c	.....

Hot-Rolled Strip: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Middletown, 6-in. and narrower: Base, 2.45c; Detroit, del., 2.55c; eastern Mich., del., 2.60c; Pacific ports, 3.10c. (Superior Steel Corp. may quote 3.30c, Pitts.)

Over 6-in.: Base, 2.35c; Detroit, del., 2.45c; eastern Mich., del., 2.50c; Pacific ports, 3.00c. (Superior Steel Corp. may quote 3.20c, Pitts.)

Cold-Rolled Strip: Pittsburgh, Cleveland, Youngstown, 0.25 carbon and less, 3.05c; Chicago, base, 3.15c; Detroit, del., 3.15c; eastern Mich., del., 3.20c; Worcester, base, 3.25c. (Superior Steel Corp. may quote 4.70c, Pitts.)

Cold-Finished Spring Steel: Pittsburgh, Cleveland base, 0.26-0.50 carbon, 3.03c. Add 0.20c for Worcester.

Tin, Terne Plate

Tin Plate: Pittsburgh, Chicago, Gary, 100-lb base box, $5.25; Granite City, Birmingham, Sparrows Point, $5.35.

Electrolytic Tin Plate: Pittsburgh, Gary, 100-lb base box, 0.25 lb tin, $4.60; 0.50 lb tin, $4.75; 0.75 lb tin, $4.90; Granite City, Birmingham, Sparrows Point, $4.70, $4.85, $5.00, respectively.

Tin Mill Black Plate: Pittsburgh, Chicago, Gary, base 29-gage and lighter, 3.30c; Granite City, Birmingham, Sparrows Point, 3.40c; Pacific ports, boxed, 4.30c.

Long Ternes: Pittsburgh, Chicago, Gary, No. 24 unassorted, 4.05c; Pacific ports, 4.80c.

Manufacturing Ternes (Special Coated): Pittsburgh, Chicago, Gary, 100-base box, $4.55; Granite City, Birmingham, Sparrows Point; $4.65.

Roofing Ternes: Pittsburgh base per package 112 sheets, 20 x 28 in., coating I. C. 8-lb $12.50; 15-lb $14.50; 20-lb $15.50 (nom.); 40-lb $20.00 (nom.)

Plates

Carbon Steel Plates: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Sparrows Point, Coatesville, Claymont, 2.50c; New York, del., 2.71c; Phila., del., 2.558c; St. Louis, 2.74c; Boston, del., 2.82-3.07c; Pacific ports, 3.05c; Gulf ports, 2.85c.

(Granite City Steel Co. may quote carbon plates 2.65c fob D.P.C. mill; Geneva Steel Co., Provo, Utah, 3.20c fob Pac. ports; Central Iron & Steel Co., Harrisburg, Pa., 2.80c, basing points; Lukens Steel Co., Coatesville, Pa., 2.75c, base; Worth Steel Co., Claymont, Del., 2.60c, base; Alan Wood Steel Co., Conshohocken, Pa., 2.75c base.)

Floor Plates: Pittsburgh, Chicago, 3.75c; Pacific ports, 4.40c; Gulf ports, 4.10c.

Open-Hearth Alloy Plates: Pittsburgh, Chicago, Coatesville, 3.787c; Gulf ports, 4.273c; Pacific ports, 4.49c.

Clad Steel Plates: Coatesville, 10% cladding: nickel-clad, 18.72c; inconel-clad, 26.00c; monel-clad, 24.96c.

Shapes

Structural Shapes: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Bethlehem, 2.35c; New York, del., 2.54c; Phila., del., 2.48c; Pacific ports, 3.00c; Gulf ports, 2.70c.

(Phoenix Iron Co., Phoenixville, Pa., may quote the equivalent of 2.60c, Bethlehem, Pa., on the general range and 2.70c on beams and channels from 4 to 10 inches.)

Steel Piling: Pittsburgh, Chicago, Buffalo, 2.65c; Pacific ports, 3.20c.

Wire and Wire Products

(Fob Pittsburgh, Chicago, Cleveland and Birmingham, per 100 pounds)

Wire to Manufacturers in carloads

Bright basic or bessemer	*$3.05
Spring (except Birmingham)	*$4.00

Wire Products to Trade

Nails and staples

Standard and cement-coated	†$3.75
Galvanized	††$3.40

Wire, Merchant Quality

Annealed	§$3.50
Galvanized	§$3.85

(Fob Pittsburgh, Chicago, Cleveland, Birmingham, per base column)

Woven fence, 15½ gage and heavier	72
Barbed wire, 80-rod spool	79
Barbless wire, twisted	79
Fence posts	74
Bale ties, single loop	72½

*Add $0.10 for Worcester, $0.05 for Duluth and $0.50 for Pacific ports.

†Add $0.30 for Worcester, $0.50 for Pacific ports. Nichols Wire & Steel may quote $4.25.

††Add $0.50 for Pacific ports.

§Add $0.10 for Worcester, $0.70 for Pacific ports.

Adjustments Pend

Delivered prices quoted on these pages are subject to upward revision in line with the Interstate Commerce Commission's order authorizing an increase in railroad freight rates, effective as of July 1. The order authorized a general 6 per cent increase with certain exceptions.

Tubular Goods

Welded Pipe: Base price in carloads, threaded and coupled to consumers about $200 per net ton. Base discounts on steel pipe Pittsburgh and Lorain, O.; Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Pittsburgh base only on wrought iron pipe.

Butt Weld

In.	Steel Blk.	Steel Galv.	In.	Iron Blk.	Iron Galv.
⅛	53	30	½	21	0½
¼ & ⅜	56	37½	¾	27	7
½	60½	43	1-1¼	31	13
¾	63½	52	1½	35	15½
1-3	65½	54½	2	34½	15

Boiler Tubes: Net base prices per 100 feet fob Pittsburgh in carload lots, minimum wall, cut lengths 4 to 24 feet, inclusive.

O.D. sizes	B.W.G.	—Seamless— Hot Rolled	Cold Drawn	—Elec. Weld— Hot Rolled	Cold Rolled
1"	13	.....	$9.90	$9.36	$9.65
1¼"	13	.....	11 73	9.63	11.43
1½"	13	$10.91	12.96	10.63	12.64
1¾"	13	12.41	14 75	12.10	14.37
2"	13	13.90	16.52	13.53	16.19
2¼"	13	15.50	18.42	15.06	18.03
2½"	12	17.07	20.28	16.57	19.83
2½"	12	18.70	22.21	18.11	21.68
2¾"	12	19 82	23.54	19.17	22.95
3"	12	20 79	24.71	20.06	24.02
3½"	11	26.24	31.18	25.30	30.29
4"	10	32 56	38.68	31.32	37.52
4½"	9	43 16	51.29	.....	.....
5"	9	49.96	59.36	.....	.....
6"	7	76.71	91.14	.....	.....

Pipe, Cast Iron: Class B, 6-in. and over, $54 per net ton, Birmingham; $62, Burlington, N. J.; $62.80, del., Chicago; 4-in. pipe, $5 higher, Class A pipe, $3 a ton over class B.

Rails, Supplies

Standard rails, over 60-lb, fob mill, net ton, $43.40. Light rails (billet), Pittsburgh, Chicago, Birmingham, net ton, $49.18.

Relaying rails, 35 lb and over, fob railroad and basing points, $31-$33.

Supplies: Track bolts, 4.75c; heat treated, 5.00c. Tie plates $51 net ton, base, Standard spikes, 3.65c.

Tool Steels

Tool Steels: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb; Reg. carbon 15.15c; extra carbon 19.48c; special carbon 23.80c; oil-hardening 25.97c; high carbon-chromium 46.53c.

W.	Cr.	V.	Mo.	Base, per lb.
18.00	4	1	...	72.49c
1.5	4	1	8.5	58.43c
.....	4	2	3	58.43c
6.40	4.15	1.90	5	62.22c
5.50	4.50	4	4.50	75.74c

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago. Additional discounts: 5 for carloads; 10 for full containers, except tire, step and plow bolts.

(Ceiling prices advanced 12 per cent, effective July 1, 1946; discounts remain unchanged.)

Carriage and Machine

½ x 6 and smaller	65½ off
Do., ⅝ and ⅝ x 6-in. and shorter	63½ off
Do., ¾ to 1 x 6-in. and shorter	61 off
1⅛ and larger, all lengths	59 off
All diameters, over 6-in. long	59 off
Tire bolts	50 off
Step bolts	56 off
Plow bolts	65 off

Stove Bolts

In packages, nuts separate, 71-10 off, nuts attached, 71 off; bulk, 80 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hex	U.S.S.	S.A.E.
⅞-in. and smaller	..	64
1-in. and smaller	62	..
1⅛-in.-1-in.	..	60
1⅛-in.-1-in.	59	..
1⅛-in.-1½-in.	57	58
1⅝-in. and larger	56	..

Additional discount of 10 for full kegs.

Hexagon Cap Screws

Upset 1-in., smaller	64 off
Milled 1-in., smaller	60 off

Square Head Set Screws

Upset 1-in. and smaller	71 off
Headless, ¼-in. and larger	60 off
No. 10 and smaller	70 off

Rivets

Fob Pittsburgh, Cleveland, Chicago, Birmingham

Structural	3.75c
⅞-inch and under	65-5 off

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $2.75-$3.00 off

Stainless Steels

Base, Cents per lb

CHROMIUM NICKEL STEELS

	Bars	Plates	Sheets	H. R. Strip	C. R. Strip
302	25.96c	29.21c	36.79c	23.93c	30.30c
303	28.13	31.38	38.95	29.21	35.71
304	27.05	31.38	38.95	25.45	32.46
308	31 38	36 79	44.36	30.84	37.87
309	38.95	43.28	50.85	40.03	50.85
310	53.02	56.26	57.35	52.74	60.59
312	38.95	43.28	53.02	.....	.....
*316	43.29	47.61	51 94	43.28	51.94
§321	31.38	36.79	44.36	31.65	41.12
†347	35.71	41 12	48.69	35.71	45.44
431	20.56	23.80	31.38	18.94	24.35

STRAIGHT CHROMIUM STEEL

403	23.93	26.51	31.92	22.99	29.21
**410	20.02	23.93	28.67	18.39	23.80
416	20.56	23.80	29.21	19.75	25.45
††420	25.96	30 84	36.25	25.70	29.49
430	20.56	23.80	31.38	18.94	24.35
‡‡430F	21.10	24.35	31.92	20.29	26.51
440A	25.96	30.84	36.25	25 70	30.49
442	24 35	27 59	35.17	25.96	34.62
443	24.35	27.59	35.17	25.96	34.62
446	29.76	33.00	39.49	37.87	56.26
501	8.66	12 98	17.04	12.98	18.39
502	9.74	14.07	18.12	14.07	19.48

STAINLESS CLAD STEEL (20%)

(Fob Pittsburgh and Washington, Pa., plate prices include annealing and pickling.)

304	....	19.48	20.56	....	....
410	....	17.31	18.39	....	....
430	....	17.85	18.94	....	....
446	....	19.48	20.56	....	....

* With 2-3% molybdenum. ‡ With titanium. † With columbium. ** Plus machining agent. †† High carbon. ‡‡ Free machining.

Metallurgical Coke

Price Per Net Ton

Beehive Ovens

Connellsville, furnace	*$8.75
Connellsville, foundry	9.25- 9.75
New River, foundry	9.00- 9.25
Wise county, foundry	7.75- 8.25
Wise county, furnace	7.25- 7.75

By-Product Foundry

Kearney, N. J. ovens	14.40
Chicago, outside delivered	14.43
Chicago, delivered	15.10
Terre Haute, delivered	14.85
Milwaukee, ovens	15.10
New England, delivered	16.00
St. Louis, delivered	†15.18
Birmingham, delivered	12.25
Indianapolis, delivered	14.85
Cincinnati, delivered	14.60
Cleveland, delivered	14.55
Buffalo, delivered	14.75
Detroit, delivered	15.10
Philadelphia, delivered	14.63

*Operators of hand-drawn ovens using trucked coal charge $9.35.

†15.68 from other than Ala., Mo., Tenn.

WAREHOUSE STEEL PRICES

Base delivered price, cents per pound, for delivery within switching limits, subject to established extras. Quotations based on mill prices announced March 1, 1946.

	Hot-rolled bars	Structural shapes	Plates	Floor plates	Hot-rolled sheets (10-gage base)	Hot-rolled strip (14-gage and lighter, 6-in and narrower)	Hot-rolled strip (12-gage and heavier wider than 6-inch)	Galvanized flat sheets (24-gage base)	Cold-rolled sheets (17-gage base)	Cold finished bars	Cold-rolled strip
Boston	4.294[1]	4.162[1]	4.162[1]	5.977[1]	3.999[1]	5.456[1]	4.356[1]	5.674[14]	4.969[14]	4.594[11]	4.965
New York	4.103[1]	4.008[1]	4.018[1]	5.824[1]	3.815[1]	4.324[1]	4.224[1]	5.460[13]	4.838[14]	4.553[31]	5.024
Jersey City	4.103[1]	3.997[1]	4.018[1]	5.824[1]	3.815[1]	4.324[1]	4.224[1]	5.460[13]	4.838[14]	4 553[31]	5 024
Philadelphia	4.114[1]	3.937[1]	3.875[1]	5.564[1]	3.774[1]	4.664[1]	4.554[1]	5.499[1]	5.139[25]	4.564[21]	5.064
Baltimore	4.003[1]	4.05[1]	3.865[1]	5.543[1]	3.64[1]	4.293[1]	4.193[1]	5.365[17]	5.118[20]	4.543[21]	.....
Washington	4.232[1]	4.22[1]	4.067[1]	5.632[1]	3.842[1]	4.432[1]	4.332[1]	5.667[17]	5.007[24]	4.532[21]	.....
Norfolk Va.	4.315[1]	4.252[1]	4.221[1]	5.715[1]	3.996[1]	4.865[1]	4.415[1]	5.821[17]	4.490[24]	4.615[21]	.....
Bethlehem, Pa.*	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Claymont, Del.*	.....	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....
Coatesville, Pa.*	.....	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo (city)	3.60[1]	3.65[1]	3.88[1]	5.51[1]	3.575[1]	4.169[1]	4.069[1]	5.20[13]	4.625[16]	4.20[21]	4.919
Buffalo (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.475[1]	3.85[1]	3.750[1]	5.10[21]	4.525[16]	4.10[21]	4.60
Pittsburgh (city)	3.60[1]	3.65[1]	3.65[1]	5.25[1]	3.575[1]	3.95[1]	3.850[1]	5.327[13]	4.625[24]	4.20[21]	4.70
Pittsburgh (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3 475[1]	3.85[1]	3.750[1]	5.10[13]	4.525[24]	4.10[21]	4 60
Cleveland (city)	3.60[1]	3.88[1]	3.65[1]	5.48[1]	3.575[1]	3.95[1]	3.850[1]	5.347[12]	4.625[24]	4.20[21]	4.70
Cleveland (country)	3.50[1]	.	3.55[1]	.	3.475[1]	3.85[1]	3.750[1]	.....	4.525[24]	4.10[21]	4.60
Detroit	3.70[1]	3.911[1]	3.859[1]	5.531[1]	3.675[1]	4.050[1]	3.950[1]	5.450[13]	4.725[24]	4.25[13]	4.909
Omaha (city, del.)	4.293[1]	4.343[1]	4.343[1]	5.943[1]	4.018[1]	4.493[1]	4 393[1]	5.965[13]	5.668[24]	4.893[21]	.....
Omaha (country)	4.193[1]	4.243[1]	4.243[1]	5.843[1]	3.918[1]	4.393[1]	4.293[1]	5.865[13]	.....	.....	.....
Cincinnati	3.861[1]	3.941[1]	3.911[1]	5.541[1]	3.650[1]	4.025[1]	3.925[1]	5.275[13]	4.700[24]	4.461[21]	4.961
Youngstown*	.....	.....	.....	.....	.....	.....	.....	4.85[13]	.....	.....	.....
Middletown, O.*	.....	.....	.....	.....	.....	.....	.....	5.10[13]	.....	.....	.....
Chicago (city)	3.75[1]	3.80[1]	3.80[1]	5.40[1]	3.475[1]	3.95[1]	3.850[1]	†5.40[13]	4.425[24]	4.20[21]	4.90
Milwaukee	3.887[1]	3.937[1]	3.937[1]	5.537[1]	3.612[1]	4.087[1]	3.987[1]	5.722[13]	4.562[24]	4.337[21]	5.037
Indianapolis	3.83[1]	3.88[1]	3.88[1]	5.48[1]	3.743[1]	4.118[1]	4.018[1]	5.368[13]	4.793[24]	4.43[21]	5.030
St. Paul	4.072[1]	4.122[1]	4.122[1]	5.722[1]	3.797[1]	4.272[1]	4.172[1]	5.635[13]	4.747[24]	4.811[21]	5.352
St. Louis	3.897[1]	3.947[1]	3.947[1]	5.547[1]	3.622[1]	4.097[13]	3.997[1]	5.622[13]	4.572[24]	4.481[21]	5.181
Memphis, Tenn.	4.265[1]	4.315[1]	4.315[1]	6.03[1]	4.190[1]	4.565[1]	4.465[1]	5.715[13]	5.005[24]	4.78[21]	.....
Birmingham	3.75[1]	3.80[1]	3.80[1]	6.153[1]	3.675[1]	4.05[1]	4.05[1]	5.20[13]	5.077[24]	4.99[21]	5.465
New Orleans (city)	4.358[1]	4.408[1]	4.408[1]	6.329[1]	4.283[1]	4.658[1]	.....	5.808[13]	5.304[24]	5.079[21]	.....
Houston, Tex.	4.00[9]	4.50[1]	4.50[1]	5.75[9]	3.988[9]	4.663[9]	4.563[9]	5.763[20]	5.819[19]	4.10[22]	.....
Los Angeles	4.65[4]	4.90[4]	5.20[4]	7.45[4]	5.225[4]	5.30[4]	5.200[4]	6.55[13]	7.425[4]	6.033[31]	5.863
San Francisco	4.20[7]	4.15[7]	4.15[7]	5.85[7]	4.125[7]	5.85[7]	4.50[7]	6.35[13]	6.875[13]	5.783[21]	7.583
Portland, Oreg.	4.70[27]	4.70[27]	5.00[27]	6.75[27]	4.875[27]	6.65[27]	5.000[27]	6.20[13]	6.825[13]	5.983[13]	.....
Tacoma, Wash.	4.60[8]	4.70[8]	5.00[8]	6.75[8]	4.87[8]	5.80[8]	4.60[8]	6.40[13]	6.55[13]	6.23[21]	.....
Seattle	4.60[8]	4.70[8]	5.00[8]	6.75[8]	4.87[8]	5.80[8]	4.60[8]	6.40[13]	6.55[13]	6.23[21]	.....

* Basing point cities with quotations representing mill prices, plus warehouse spread; † open market price.

BASE QUANTITIES

[1]—400 to 1999 pounds; [2]—400 to 14,999 pounds; [3]—any quantity; [4]—300 to 1999 pounds; [5]—400 to 8999 pounds; [6]—300 to 9999 pounds; [7]—400 to 39,999 pounds; [8]—under 2000 pounds; [9]—under 4000 pounds; [10]—500 to 1499 pounds; [11]—one bundle to 39,999 pounds; [12]—150 to 2249 pounds; [13]—150 to 1499 pounds; [14]—three to 24 bundles.. [15]—450 to 1499 pounds; [16]—one bundle to 1499 pounds; [17]—one to nine bundles; [18]—one to six bundles; [19]—100 to 749 pounds; [20]—300 to 1999 pounds; [21]—1500 to 39,999 pounds; [22]—1500 to 1999 pounds; [23]—1000 to 39,999 pounds; [24]—400 to 1499 pounds; [25]—1000 to 1999 pounds; [26]—under 25 bundles. Cold-rolled strip, 2000 to 39,999 pounds, base; [27]—300 to 4999 pounds.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$5.45
Mesabi nonbessemer	5.05
High phosphorus	5.05
Mesabi bessemer	5.20
Old range nonbessemer	5.30

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56-63% contract	18.00

Foreign Ore

Cents per unit, cif Atlantic ports

Manganiferous ore, 45-55% Fe., 6-10% Mn.	Nom.
N. African low phos.	Nom.
Swedish basic, 60 to 68%	Nom.
Spanish, N. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% fob Rio de Janeiro	7.50-8.00

Tungsten Ore

Chinese Wolframite, per short ton unit, duty paid	$24.00

Chrome Ore

Gross ton fob cars, New York, Philadelphia, Baltimore, Charleston, S. C., Portland, Oreg., or Tacoma, Wash.

(S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African

48% 2.8:1	$39.75
48% 3:1	41.00
48% no ratio	31.00

South African (Transvaal)

44% no ratio	$27.40
45% no ratio	28.30
48% no ratio	31.00
50% no ratio	32.80

Brazilian—nominal

44% 2.5:1 lump	$33.65
48% 3:1 lump	43.50

Rhodesian

45% no ratio	$28.30
48% no ratio	31.00
48% 3:1 lump	41.00

Domestic (seller's nearest rail)

48% 3:1	$43.50

less $7 freight allowance.

Manganese Ore

Sales prices of Office of Metals Reserve, cents per gross ton unit, dry, 48%, at New York, Philadelphia, Baltimore, Norfolk, Mobile and New Orleans, 85c; Fontana, Calif., Provo, Utah, and Pueblo, Colo., 91c; prices include duty on imported ore and are subject to established premiums, penalties and other provisions. Price at basing points which are also points of discharge of imported manganese ore is fob cars, shipside, at dock most favorable to the buyer. Outside shipments direct to consumers at 10c per unit less than Metal Reserve prices.

Molybdenum

Sulphide conc., lb., Mo. cont., mines	$0.75

NATIONAL EMERGENCY STEELS (Hot Rolled)

(Extras for alloy content)

Basic open-hearth Electric furnace

Designation	Carbon	Mn	Si	Cr	Ni	Mo	Bars per 100 lb.	Billets per GT	Bars per 100 lb.	Billets per GT
	Chemical Composition Limits, Per Cent									
NE 9415	.13-.18	.80-1.10	.20-.35	.30-.50	.30-.60	.08-.15	$0.812	$16.230	$1.353	$27.050
NE 9425	.23-.28	.80-1.20	.20-.35	.30-.50	.30-.60	.08-.15	.812	16.230	1.353	27.050
NE 9442	.40-.45	1.00-1.30	.20-.35	.30-.50	.30-.60	.08-.15	.866	17.312	1.407	28.132
NE 9722	.20-.25	.50-.80	.20-.35	.10-.25	.40-.70	.15-.25	.703	14.066	1.244	24.886
NE 9912	10-.15	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.298	25.968	1.677	33.542
NE 9920	.18-.23	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.298	25.968	1.677	33.542

Extras are in addition to a base price of 2.921c. per pound on finished products and $58.43 per gross ton on semifinished steel major basing points and are in cents per pound and dollars per gross ton. No prices quoted on vanadium alloy.

Pig Iron

Prices per gross ton. Delivered prices do not include 3 per cent federal tax, effective Dec. 1, 1942.

	No. 2 Foundry	Basic	Bessemer	Malleable
Bethlehem, Pa., base	$27.50	$27.00	$28.50	$28.00
Newark, N. J., del.	29.20	28.70	30.20	29.70
Brooklyn, N. Y., del.	30.28	.....	.....	30.78
Birdsboro, Pa., base	27.50	27.00	28.50	28.00
Birmingham, base	22.88	21.50	27.50	.....
Baltimore, del.	28.22	.....	.....	.....
Boston, del.	27.64	.....	.....	.....
Chicago, del.	26.72	.....	.....	.....
Cincinnati, del.	26.94	26.06	.....	.....
Cleveland, del	26.62	25.74	.....	.....
Newark, N. J.	28.82	.....	.....	.....
Philadelphia, del.	28.05	27.55	.....	.....
St. Louis, del.	26.62	25.54	.....	.....
Buffalo, base	26.50	25.50	27.50	27.00
Boston, del.	28.00	27.00	29.00	28.50
Rochester, del.	28.03	.....	29.03	28.53
Syracuse, del.	28.58	.....	29.58	29.08
Chicago, base	26.50	26.00	27.00	26.50
Milwaukee, del.	27.60	27.10	28.10	27.60
Muskegon, Mich., del.	27.69	.....	.....	27.69
Cleveland, base	26.50	26.00	27.00	26.50
Akron, Canton, del.	28.04	27.54	28.54	28.04
Detroit, base	26.50	26.00	27.00	26.50
Saginaw, Mich., del.	28.81	28.31	29.31	28.81
Duluth, base	27.00	26.50	27.50	27.00
St. Paul, del.	29.13	28.63	29.63	29.13
Erie, Pa., base	26.50	26.00	27.50	27.00
Everett, Mass., base	27.50	27.00	28.50	28.00
Boston, del.	28.00	27.50	29.00	28.50
Granite City, Ill., base	26.50	26.00	27.00	26.50
St. Louis, del.	27.00	26.50	.....	27.00
Hamilton, O., base	26.50	26.00	.....	26.50
Cincinnati, del.	27.61	27.11	.....	27.61
Neville Island, Pa., base	26.50	26.00	27.00	26.50
*Pittsburgh, del. N. & S. sides	27.19	26.69	27.69	27.19
Provo, Utah, base	24.50	24.00	.....	.....
Sharpsville, Pa., base	26.50	26.00	27.00	26.50
Sparrows Point, base	27.50	27.00	.....	.....
Baltimore, del.	28.60	.....	.....	.....
Steelton, Pa., base		27.00		
Swedeland, Pa., base	27.50	27.00	28.50	28.00
Philadelphia, del.	28.43	27.93	.....	28.93
Toledo, O., base	26.50	26.00	27.00	26.50
Youngstown, O., base	26.50	26.00	27.00	26.50
Mansfield, O., del.	28.66	28.16	29.16	28.66

*To Neville Island base add: 55 cents for McKees Rocks, Pa.; 84 cents, Lawrenceville, Homestead, McKeesport, Ambridge, Monaco, Aliquippa; 97 cents (water), Monongahela; $1.11, Oakmont, Verona; $1.24, Brackenridge.

Exception to above prices: Struthers Iron & Steel Co., Struthers, O., may charge 50 cents a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable pig iron. Effective June 19, Republic Steel Corp. was permitted to quote $4 a ton higher on the Birmingham base for No. 2 foundry and basic. As of July 2, another southern producer advanced Birmingham base prices $3 a ton.

High Silicon, Silvery

6.00-6.50 per cent (base) $32.00
6.51-7.00..$33.00 9.01- 9.50. 38.00
7.01-7.50.. 34.00 9.51-10.00. 39.00
7.51-8.00.. 35.00 10.01-10.50. 40.00
8.01-8.50.. 36.00 10.51-11.00. 41.00
8.51-9.00.. 37.00 11.01-11.50. 42.00

Fob Jackson county, O., per gross ton; Buffalo base $1.25 higher. Buyer may use whichever base is more favorable.

Electric Furnace Ferrosilicon: Si 14.01 to 14.50%, $48 Jackson co.; each additional 0.50% silicon up to and including 18% add $1; low impurities not exceeding 0.005 P, 0.40 Si, 1.0% C, add $1.

Bessemer Ferrosilicon

Prices same as for high silicon silvery iron, plus $1 per gross ton.

Charcoal Pig Iron

Semi-cold blast, low phosphorus.

Fob furnace, Lyles, Tenn., $33.00 (For higher silicon irons a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $26.00
Valley base 26.00

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Buffalo, N. Y., $32.00 base; $33.38, del. Philadelphia. Intermediate phosphorus, Central Furnace, Cleveland, $29.00.

Differentials

Basing point prices are subject to following differentials:

Silicon: An additional charge not to exceed 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge not to exceed 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Refractories

Per 1000, fob shipping point. Net prices

Fire Clay Brick

Super Duty

Pa., Mo., Ky. $76.06

High Heat Duty

Pa., Ill., O., Md., Mo., Ky. 60.40
Ala., Ga. 60.40
N. J. 65.90

Intermediate Heat Duty

Ohio 50.60
Pa., Ill., Md., Mo., Ky. 54.90
Ala., Ga. 49.15
N. J. 57.65

Low Heat Duty

Pa., Md., Ohio 42.35

Malleable Bung Brick

All bases 70.48

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry Press 36.48
Wire Cut 34.18

Silica Brick

Pennsylvania 60.40
Joliet, E. Chicago 69.30
Birmingham, Ala. 60.40

Magnesite

Domestic dead-burned grains, net ton, fob Chewelah, Wash.
Bulk 22.00
Bags 26.00

Basic Brick

Net ton, fob Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick 54.00
Chem. bonded chrome 54.00
Magnesite brick 76.00
Chem. bonded magnesite 65.00

Fluorspar

Metallurgical grade, fob shipping point in Ill., Ky., net ton, carloads, effective CaF_2 content, 70% or more, $33; 65% to 70%, $32; 60% to 65%, $31; less than 60%, $30.

Ferroalloy Prices

Ferromanganese, standard: 78-82% c.l. gross ton, duty paid, $135 fob cars, Baltimore, Philadelphia or New York, whichever is most favorable to buyer, Rockdale or Rockwood, Tenn. (where Tennessee Products Co. is producer), Birmingham, Ala. (where Sloss-Sheffield Steel & Iron Co. is producer); $140 fob cars, Pittsburgh (where Carnegie-Illinois Steel Corp. is producer); add $6 for packed c.l., $10 for ton, $13.50 for less ton; $1.70 for each 1%, or fraction contained manganese over 82% or under 78%.

Ferromanganese, low carbon: Eastern zone: Special, 21c; regular, 20.50c; medium, 14.50c; central zone: Special, 21.30c; regular, 20.80c; medium, 14.80c; western zone: Special, 21.55c; regular, 21.05c; medium, 15.75c. Prices are per pound contained Mn, bulk carlot shipments, fob shipping point, freight allowed. Special low-carbon has content of 90% Mn, 0.10% C, and 0.06% P.

Spiegeleisen: 19-21% carlot per gross ton, Palmerton, Pa., $36; Pittsburgh, $40.50; Chicago, $40.60.

Electrolytic Manganese: 99.9% plus, fob Knoxville, Tenn., freight allowed east of Mississippi on 250 lb or more: Carlots 32c, ton lots 34c, drum lots 36c, less than drum lot 38c. Add 1½c for hydrogen-removed metal.

Chromium Metal: 97% min. chromium, max. 0.50% carbon, eastern zone, per lb contained chromium bulk, c.l., 79.50c, 2000 lb to c.l. 80c; central 81c and 82.50c; western 82.25c and 84.75c; fob shipping point, freight allowed.

Ferrocolumbium: 50-60% per lb contained columbium in gross ton lots, contract basis, R. R. freight allowed, eastern zone, $2.25; less-ton lots $2.30. Spot prices up 10 cents.

Ferrochrome: Contract, lump, packed; **high carbon,** eastern zone, c.l. 15.05c, ton lots 15.55c; central zone, add 0.40c and 0.65c; western zone, add 0.5c and 1.85c; **high carbon, high nitrogen,** add 5c to all high carbon ferrochrome prices. Deduct 0.55c for bulk carlots. Spot prices up 0.25c.

Low carbon, eastern zone, bulk, c.l., max. 0.06% C 23c; 0.1% 22.50c, 0.15% 22c, 0.2% 21.50c, 0.5% 21c, 1% 20.50c, 2% 19.50c, add 1c for 2000 lb to c.l.; central zone, add 0.4c for bulk, c.l., and 0.65c for 2000 lb to c.l.; western zone, add 0.5c for bulk, c.l., and 1.85c for 2000 lb to c.l.; carload packed differential 0.45c. Prices are per pound of contained Cr, fob shipping points. **Low carbon, high nitrogen:** Add 2c to low carbon ferrochrome prices. For higher nitrogen low carbon, add 2c for each 0.25% of nitrogen over 0.75%.

Special Foundry Ferrochrome (Cr 62-66%, C about 5-7%): Contract, lump, packed, eastern zone, freight allowed, c.l. 15.60c, ton lots 16.10c, less than ton 16.75c; central zone, add 0.40c for c.l. and 0.65c for smaller lots; western zone, add 0.5c for c.l. and 1.85c for smaller lots. Deduct 0.55c for bulk carlots.

S. M. Ferrochrome, high carbon (Cr 60-65%, Si, Mn and C 4-6% each): Contract, lump, packed, eastern zone, freight allowed, c.l. 16.15c, ton lots 16.65c, less ton 17.30c; central zone, add 0.40c for c.l. and 0.65c for smaller lots; western zone, add 0.5c for c.l. and 1.85c for smaller lots. Prices are per lb of contained chromium; spot prices 0.25c higher. Deduct 0.55c for bulk carlots.

S.M. Ferrochrome, low carbon: (Cr 62-66%, Si 4-6%, Mn 4-6% and C 1.25% max.) Contract, carlot, bulk, 20.00c, packed 20.45c, ton lots 21.00c, less ton lots 22.00c, eastern, freight allowed, per pound contained chromium, 20.40c, 20.50c, 20.95c and 22.65c, central; 21.00c, 21.45c, 22.85c and 23.85c, western; spot up 0.25c.

SMZ Alloy: (Si 60-55%, Mn 5-7%, Zr 5-7% and Fe approx. 20%) per lb of alloy contract carlots 11.50c, ton lots 12.00c, less 12.50c, eastern zone, freight allowed; 12.00c, 12.85c and 13.35c central zone; 14.05c, 14.60c and 15.10c, western; spot up 0.25c.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 5-7%, Zr 5-7%, Ti 9-11% and B 0.55-0.75%), per lb of alloy contract, carlots 25.00c, ton lots 26.00c, less ton lots 27.00c, eastern, freight allowed, 25.50c, 26.75c and 27.75c, central; 27.50c, 28.90c and 29.90c, western; spot up 0.25c.

Silvaz Alloy: (Si 35-40%, Va 9-11%, Al 5-7%, Zr 5-7%, Ti 9-11% and B 0.55-0.75%), per lb of alloy. Contract, carlots 58.00c, ton lots 59.00c, less 60.00c, eastern freight allowed; 58.50c, 59.75c and 60.75c, central; 60.50c, 61.90c and 62.90c, western; spot up 0.25c.

CMSZ Alloy 4: (Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75% and C 3.00-4.50%). Contract carlots, bulk, 11.00c and packed 11.50c; ton lots 12.00c; less 12.50c, eastern, freight allowed; 11.50c and 12.00c, 12.75c, 13.25c, central; 13.50c and 14.00c, 14.75c, 15.25c, western; spot up 0.25c.

CMSZ Alloy 5: (Cr 50-56%, Mn 4-6%, Si 13.50-16.00%, Zr 0.75-1.25%, C 3.50-5.00%) per lb of alloy. Contract, carlots, bulk 10.75c, packed 11.25c, ton lots 11.75c, less 12.25c, eastern, freight allowed; 11.25c, 11.75c, 12.50c, 13.00c, central; 13.25c, 13.75c, 14.50c and 15.00c, western; spot up 0.25c.

Ferro-Boron: (B 17.50% min., Si 1.50% max., Al 0.50% max and C 0.50% max.) per lb of alloy contract ton lots $1.20, less ton lots $1.30, eastern, freight allowed; $1.2075 and $1.3075 central; $1.229 and $1.329, western; spot add 5c.

Manganese-Boron: (Mn 75% approx., B 15-20%, Fe 5% max., Si 1.50% max. and C 3% max.) per lb of alloy. Contract ton lots, $1.80, less $2.01, eastern; freight allowed; $1.903 and $2.023, central; $1.938 and $2.055 western; spot up 5c.

Nickel-Boron: (B 15-18%, Al 1% max., Si 1.50% max., C 0.50% max., Fe 3% max., Ni, balance), per lb of alloy. Contract, 5 tons or more, $1.90, 1 ton to 5 tons, $2.00, less than ton $2.10, eastern, freight allowed; $1.9125, $2.0125 and $2.1125, central; $1.9445, $2.0445 and $2.1445, western; spot same as contract.

Chromium-Copper: (Cr 8-11%, Cu 88-90%, Fe 1% max., Si 0.50% max.) contract, any quantity 45c, eastern, Niagara Falls, N. Y., basis, freight allowed to destination, except to points taking rate in excess of St. Louis rate to which equivalent of St. Louis rate will be allowed; spot up 2c.

Vanadium Oxide: (Fused: Vanadium oxide 85-88%, sodium oxide approx. 10% and calcium oxide approx. 2%, or Red Cake: Vanadium oxide 85% approx., sodium oxide, approx. 9% and water approx.

2.5%) Contract, any quantity $1.10 eastern, freight allowed per pound vanadium oxide contained; contract carlots, $1.105, less carlots, $1.108, central; $1.118 and $1.133, western; spot and 5c to contracts in all cases.

Calcium metal; cast: Contract ton lots or more $1.35, less, $1.60, pound of metal; $1.36 and $1.61 central, $1.40 and $1.65, western; spot up 5c.

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%), per lb of alloy. Contract, carlots, 15.50c, ton lots 16.50c and less 17.00c, eastern, freight allowed; 16.00c, 17.35c, and 17.85c, central; 18.05c, 19.10c and 19.60c western; spot up 0.25c.

Calcium - Silicon: (Ca 30-35%, Si 60-65% and Fe 3.00% max.), per lb of alloy. Contract, carlot, lump 13.00c, ton lots 14.50c, less 15.50c, eastern, freight allowed; 13.50c, 15.25c and 16.25c central; 15.55c, 17.40c and 18.40c, western; spot up 0.25c.

Briquets Ferromanganese: (Weight approx. 3 lb and containing exactly 2 lb Mn) per lb of briquets. Contract, carlots, bulk 0.0605c, packed 0.063c, tons 0.0655c, less 0.068c, eastern, freight allowed; 0.063c, 0.0655c, 0.0755c and 0.078c, central; 0.066c, 0.0685c, 0.0855c and 0.088c, western; spot up 0.25c.

Briquets, Ferrochrome: Containing exactly 2 lb Cr, packed, eastern zone, c.l. 9.50c, ton lots 9.80c, less than ton 10.10c, central zone, add 0.3c for c.l. and 0.5c for smaller lots; western zone, add 0.70c for c.l. and 2c for smaller lots. Deduct 0.30c for bulk carlots. Prices per lb of briquets; spot prices 0.25c higher.

Silicomanganese, containing exactly 2 lb Mn and about ½ lb Si, eastern zone, bulk, c.l. 5.80c, ton lots 6.35c; central zone, add 0.25c for c.l. and 1c for ton lots; western, add 0.55c for c.l. and 0.20c for ton lots. **Ferrosilicon,** weighing about 5 lb and containing exactly 2 lb Si, or about 2½ lb and containing exactly 1 lb Si, packed, eastern zone, c.l. 3.90c, ton lots 4.15c, less ton lots 4.45c; central zone, add 0.15c for c.l. and 0.40c for smaller lots; western zone, add 0.30c for c.l. and 0.45c for smaller lots. Prices are f.o.b. shipping point, freight allowed; spot prices 0.25c higher. Deduct 0.30c for bulk carlots.

Ferromolybdenum: 55-75% per lb contained Mo, fob Langeloth and Washington, Pa., furnace, any quantity 95.00c.

Ferrophosphorus: 17-19%, based on 18% P content with unitage of $3 for each 1% of P above or below the base; gross tons per carload fob sellers' works, with freight equalized with Rockdale, Tenn.; contract price $58.50, spot $62.25.

Ferrosilicon: Contract, lump, packed; eastern zone quotations: 90-95% c.l. 12.65c, ton lots 13.10c, smaller lots 13.50c; 80-90% c.l. 10.35c, ton lots 10.85c, smaller lots 11.35c; 75% c.l. 9.40c, ton lots 9.95c, smaller lots 10.45c; 50% c.l. 7.90c, ton lots 8.50c, smaller lots 9.10c. Prices are fob shipping point, freight allowed, per lb of contained Si. Spot prices 0.25c higher. Deduct 0.85c for bulk carlots.

Grainal: Vanadium Grainal No. 1 87.5c; No. 6, 60c; No. 79, 45c; all fob Bridgeville, Pa., usual freight allowance.

Silicon Metal: Min. 97% Si and max. 1% Fe, eastern zone, bulk, c.l., 12.90c; 2000 lb to c.l., 13.45c; central, 13.20c and 13.90c; western, 13.85c and 16.80c; min. 96% Si and max. 2% Fe, eastern, bulk; c.l., 12.50c, 2000 lb to c.l., 13.10c; central, 12.80c and 13.55c; western, 13.45c and 16.50c, fob shipping point, freight allowed. Price per lb contained Si.

Manganese Metal: (Min. 96% Mn, max. 2% Fe), per lb of metal, eastern zone, bulk, c.l., 30c, 2000 lb to c.l., 32c, central, 30.25c, and 33c; western, 30.55c and 35.05c.

Ferrotungsten: Spot 10,000 lb or more, per lb contained W, $1.90; contract, $1.88; freight allowed as far west as St. Louis.

Tungsten Metal Powder: Spot, not less than 97%, $2.50-$2.60; freight allowed as far west as St. Louis.

Ferrotitanium: 40-45%, R.R. freight allowed, per lb contained Ti; ton lots $1.23; less-ton lots $1.25; eastern. Spot up 5c per lb.

Ferrotitanium: 20-25%, 0.10 maximum carbon; per lb contained Ti; ton lots $1.35; less-ton lots $1.40 eastern. Spot up 5c per lb.

High-Carbon Ferrotitanium: 15-20% contract basis, per net ton, fob Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis, 6.8% C $142.50; 3-5% C $157.50.

Carbortam: B 0.90 to 1.15% net ton to carload, 8c per lb fob Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Bortam: B 1.5-1.9%, ton lots, 45c lb; less-ton lots, 50c lb.

Ferrovanadium: Va 35-55%, contract basis, per lb contained Va, fob producers plant with usual freight allowances; open-hearth grade $2.70; special grade $2.80; highly-special grade $2.90.

Zirconium Alloys: Zr 12-15%, per lb of alloy, eastern contract, carlots, bulk, 4.60c, packed 4.80c, ton lots 4.80c, less tons 5c, carloads, bulk, per gross ton $102.50; packed $107.50; ton lots $108; less-ton lots $112.50. Spot up $5 per ton.

Zirconium Alloy: Zr 35-40%, eastern, contract basis, carloads in bulk or package, per lb of alloy 14.00c; gross ton lots 15.00c; less-ton lots 16.00c. Spot up ¼c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) contract basis fob Niagara Falls, N. Y., lump per lb 5.88c; ton lots 6.38c; less 6.88c. Spot up ½c.

Siminal: (Approx. 20% each Si, Mn, Al) Contract, freight not exceeding St. Louis rate allowed, per lb alloy; carlots 8c; ton lots 8.75c; less-ton lots 9.25c.

Borosil: 3 to 4% B, 40 to 45% Si, $6.25 lb contained B, fob Philo, O., freight not exceeding St. Louis rate allowed.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Following prices are quotations developed by editors of STEEL in the various centers. Quotations are on gross tons.

PHILADELPHIA:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$18.75
No. 2 Heavy Melt. Steel	18.75
No. 2 Bundles	18.75
No. 3 Bundles	16.75
Mixed Borings, Turnings	13.75
Machine Shop Turnings	13.75
Billet, Forge Crops	23.75
Bar Crops, Plate Scrap	21.25
Cast Steel	21.25
Punchings	21.25
Elec. Furnace Bundles	19.75
Heavy Turnings	18.25

Cast Grades

(Fob Shipping Point)

Heavy Breakable Cast	16.50
Charging Box Cast	19.00
Cupola Cast	20.00
Unstripped Motor Blocks	17.50
Malleable	22.00
Chemical Borings	16.51

NEW YORK:

(Dealers' buying prices)

No. 1 Heavy Melt. Steel	$15.33
No. 2 Heavy Melt. Steel	15.33
No. 2 Hyd. Bundles	15.33
No. 3 Hyd. Bundles	13.33
Chemical Borings	14.33
Machine Turnings	10.33
Mixed Borings, Turnings	10.33
No. 1 Cupola	20.00
Charging Box	19.00
Heavy Breakable	16.50
Unstripped Motor Blocks	17.50
Stove Plate	19.00

BOSTON:

(Fob shipping points. Boston differential 99c higher, steelmaking grades; Providence, $1.09 higher)

No. 1 Heavy Melt. Steel	$14.06
No. 2 Heavy Melt. Steel	14.06
No. 1 Bundles	14.06
No. 2 Bundles	14.06
No. 1 Busheling	14.06
Machine Shop Turnings	9.06
Mixed Borings, Turnings	9.06
Short Shovel Turnings	11.06
Chemical Borings	13.31
Low Phos. Clippings	16.56
No. 1 Cast	20.00
Clean Auto Cast	20.00
Stove Plate	19.00
Heavy Breakable Cast	16.50

BUFFALO:

(Delivered consumers' plant)

No. 1 Heavy Melt. Steel	$19.25
No. 2 Heavy Melt. Steel	19.25
No. 1 Bundles	19.25
No. 2 Bundles	19.25
No. 1 Busheling	19.25
Machine Turnings	14.25
Short Shovel Turnings	16.25
Mixed Borings, Turn.	14.25
Cast Iron Borings	15.25
Low Phos.	21.75

PITTSBURGH:

(Delivered consumers' plant)

Railroad Heavy Melting	$21.00
No. 1 Heavy Melt. Steel	20.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Comp. Bundles	20.00
No. 2 Comp. Bundles	20.00
Short Shovel Turnings	17.00
Mach. Shop Turnings	15.00
Mixed Borings, Turnings	15.00
No. 1 Cupola Cast	*20.00
Heavy Breakable Cast	*16.50
Cast Iron Borings	16.00
Billet, Bloom Crops	25.00
Sheet Bar Crops	22.50
Plate Scrap, Punchings	22.50
Railroad Specialties	24.50
Scrap Rail	21.50
Axles	26.00
Rail 3 ft. and under	23.50
Railroad Malleable	22.00

* Shipping point.

CLEVELAND:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19.50
No. 2 Heavy Melt. Steel	19.50
No. 1 Comp. Bundles	19.50
No. 2 Comp Bundles	19.50
No. 1 Busheling	19.50
Mach. Shop Turnings	14.50
Short Shovel Turnings	16.50
Mixed Borings, Turnings	14.50
No. 1 Cupola Cast	20.00
Heavy Breakable Cast	16.50
Cast Iron Borings	13.50-14.00
Billet, Bloom Crops	24.50
Sheet Bar Crops	22.00
Plate Scrap, Punchings	22.00
Elec. Furnace Bundles	20.50

VALLEY:

(Delivered consumer's plant)

No. 1 R.R. Heavy Melt.	$21.00
No. 1 Heavy Melt. Steel	20.00
No. 1 Comp. Bundles	20.00
Short Shovel Turnings	17.00
Cast Iron Borings	16.00
Machine Shop Turnings	15.00
Low. Phos. Plate	22.50

MANSFIELD:

(Delivered consumer's plant)

Machine Shop Turnings	$15.00

CINCINNATI:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19.50
No. 2 Heavy Melt. Steel	19.50
No. 1 Comp. Bundles	19.50
No. 2 Comp. Bundles	19.50
Machine Turnings	10.50-11.00
Shoveling Turnings	12.50-13.00
Cast Iron Borings	11.50-12.00
Mixed Borings, Turnings	10.50-11.00
No. 1 Cupola Cast	20.00
Breakable Cast	16.50
Low Phosphorus	21.00-22.00
Scrap Rails	20.50-21.00
Stove Plate	18.50-19.00

DETROIT:

(Delivered consumer's plant)

Heavy Melting Steel	$17.32
No. 1 Busheling	17.32
Hydraulic Bundles	17.32
Flashings	17.32
Machine Turnings	12.32
Short Shovel, Turnings	14.32
Cast Iron Borings	13.32
Low Phos. Plate	19.82
No. 1 Cast	20.00
Heavy Breakable Cast	16.50

CHICAGO:

(Delivered consumer's plant; cast grades fob shipping point; railroad grades fob tracks)

No. 1 R.R. Heavy Melt.	$19.75
No. 1 Heavy Melt. Steel	18.75
No. 2 Heavy Melt. Steel	18.75
No. 1 Ind. Bundles	18.75
No. 2 Dlr. Bundles	18.75
Baled Mach. Shop Turn.	18.75
No. 3 Galv. Bundles	16.75
Machine Turnings	13.75
Mix. Borings, Sht. Turn.	13.75
Short Shovel Turnings	15.75
Cast Iron Borings	14.75
Scrap Rails	20.25
Cut Rails, 3 feet	22.25
Cut Rails, 18-inch	23.50
Rerolling Rails	22.25
Angles, Splice Bars	22.25
Plate Scrap, Punchings	21.25
Railroad Specialties	22.75
No. 1 Cast	20.00
R.R. Malleable	22.00

ST. LOUIS:

(Delivered consumer's plant; cast grades fob shipping point)

Heavy Melting	$17.50
No. 1 Locomotive Tires	21.00
Misc. Rails	19.00
Railroad Springs	22.00
Bundled Sheets	17.50
Axle Turnings	17.00
Machine Turnings	10.50
Shoveling Turnings	12.50
Rerolling Rails	21.00
Street Car Axles	24.50
Steel Rails, 3 ft.	21.50
Steel Angle Bars	21.00
Cast Iron Wheels	20.00
No. 1 Machinery Cast	20.00
Railroad Malleable	22.00
Breakable Cast	16.50
Stove Plate	19.00
Grate Bars	15.25
Brake Shoes	15.25

BIRMINGHAM:

(Delivered consumer's plant)

Billet Forge Crops	$22.50
Structural, Plate Scrap	19.00
Scrap Rails Random	18.50
Rerolling Rails	20.50
Angle Splice Bars	20.50
Solid Steel Axles	24.00
Cupola Cast	20.00
Stove Plate	19.00
Long Turnings	11.00
Cast Iron Borings	13.00
Iron Car Wheels	20.00

LOS ANGELES:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$14.00
No. 2 Heavy Melt. Steel	13.00
No. 1, 2 Dlr. Bundles	12.00
Machine Turnings	5.50
Mixed Borings, Turnings	5.50
No. 1 Cast	20.00

SAN FRANCISCO:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$17.00
No. 2 Heavy Melt. Steel	17.00
No. 1 Busheling	17.00
No. 1, No. 2 Bundles	17.00
No. 3 Bundles	9.00
Machine Turnings	7.00
Billet, Forge Crops	15.50
Bar Crops, Plate	15.50
Cast Steel	15.50
Cut, Structural, Plate 1 ft and under	18.00
Alloy-free Turnings	7.00
Tin Can Bundles	14.50
No. 2 Steel Wheels	21.50
Iron, Steel Axles	24.00
No. 2 Cast Steel	20.50
Uncut Frogs, Switches	18.00
Scrap Rails	18.50
Locomotive Tires	20.50

SEATTLE:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$14.12
No. 2 Heavy Melt. Steel	14.12
Heavy Railroad Scrap	14.50

(Fob shipping point)

No. 1 Cupola Cast	20.00

LOGEMANN
Presses for Sheet Scrap

THE NATION NEEDS YOUR SHEET SCRAP!

In mills, industrial plants and scrap yards, LOGEMANN SCRAP PRESSES are working day and night to prepare sheet scrap for the furnaces.

Sheet mills particularly recognize the value of the years of experience and the performance records which back up LOGEMANN designs and workmanship.

The line includes scrap presses *designed for mill Service,* presses *designed for automobile plant conditions,* presses *designed for general plant applications.* Write for details.

LOGEMANN BROTHERS COMPANY
3126 W. Burleigh St. **Milwaukee, Wisconsin**

The scrap press illustrated operates in one of the largest industrial plants. Compresses scrap from three directions to produce high-density mill size bundles. Built in various capacities.

NONFERROUS METAL PRICES

Copper: Electrolytic or Lake from producers in carlots 14.37½c, del. Conn.; less carlots 14.50c, refinery. Dealers may add ¾c for 5000 lb to carload; 1c, 1000-4999 lb; 1½c, 500-999 lb; 2c, 0-499 lb. Casting, 14.12½c, refinery, 20,000 lb or more; 14.37½c, less than 20,000 lb.

Brass Ingot: 85-5-5-5 (No. 115) 15.25c; 88-10-2 (No. 215) 18.50c; 80-10-10 (No. 305) 18.00c; No. 1 yellow (No. 405) 12.25c; carlot prices, including 25c per 100 lb freight allowance; add ¼c for less than 20 tons.

Zinc: Prime western 8.25c-9.50c, select 8.35c-9.60c, brass special 8.50c-9.75c, intermediate 8.75c-10.00c, high grade 9.25c-10.50c, E. St. Louis, for carlots. For 20,000 lb to carlots add 0.15c; 10,000-20,000 lb 0.25c; 2000-10,000 lb 0.40c; under 2000 lb 0.50c.

Lead: Common 9.35c, chemical 9.35c, corroding, 9.45c, E. St. Louis for carlots; add 5 points for Chicago, Minneapolis-St. Paul, Milwaukee-Kenosha districts; add 15 points for Cleveland - Akron - Detroit area, New Jersey, New York state, Texas, Pacific Coast, Richmond, Indianapolis-Kokomo; add 20 points for Birmingham, Connecticut, Boston - Worcester, Springfield, New Hampshire, Rhode Island.

Primary Aluminum: 99% plus, ingots 15.00c del., pigs 14.00c del.; metallurgical 94% min. 13.50c del. Base 10,000 lb and over; add ½c 2000-9999 lb; 1c less through 2000 lb.

Secondary Aluminum: Piston alloy (No. 122 type) 11.25c; No. 12 foundry alloy (No. 2 grade) 11.00-11.25c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1 (95-97½%) 12.50c; grade 2 (92-95%) 11.50c; grade 3 (90-92%) 10.00-10.25c; grade 4 (85-90%) 9.50-9.75c. Above prices for 30,000 lb or more; add ¼c 10,000-30,000 lb; ½c 5000-10,000 lb; ¾c 1000-5000 lb; 1¼c less than 1000 lb. Prices include freight at carload rate up to 75c per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots (4-notch, 17 lb) 20.50c per lb, carlots; 22.50c 100 lb to c.l. Extruded 12-in. sticks 27.50c, carlots; 29.50c 100 lb to c.l.

Tin: Prices ex-dock, New York in 5-ton lots. Add 1 cent for 2240-11,199 lb, 1½c 1000-2239, 2½c 500-999, 3c under 500. Grade A, 99.8% or higher (includes Straits), 52.00c; Grade B, 99.8% or higher, not meeting specifications for Grade A, with 0.05% max. arsenic, 51.87½c; Grade C, 99.65-99.79% incl. 51.62½c; Grade D, 99.50-99.64% incl., 51.50c; Grade E, 99-99.49% incl. 51.12½c; Grade F, below 99% (for tin content), 51.00c.

Antimony: American bulk carlots fob Laredo, Tex., 99.0% to 99.8% and 99.8% and over but not meeting specifications below, 14.50c; 99.8% and over (arsenic, 0.05% max.; other impurities, 0.1% max.) 15.00c. On producers' sales add ¼c for less than carload to 10,000 lb; ½c for 9999-224 lb; and 2c for 223 lb and less; on sales by dealers, distributors and jobbers add ½c, 1c, and 3c, respectively.

Nickel: Electrolytic cathodes, 99.5%, fob refinery 35.00c lb; pig and shot produced from electrolytic cathodes 36.00c; "F" nickel shot or ingot for additions to cast iron, 34.00c.

Mercury: Open market, spot, New York, $101-$103 per 76-lb flask.

Arsenic: Prime, white, 99%, carlots, 4.00c lb.

Beryllium-Copper: 3.75-4.25% Be, $14.75 per lb contained Be.

Cadmium: Bars, ingots, pencils, pigs, plates, rods, slabs, sticks, and all other "regular" straight or flat forms 90.00c lb, del.; anodes, balls, discs and all other special or patented shapes 95.00c per lb delivered.

Cobalt: 97-99%, $1.50 lb, for 550 lb (bbl.); $1.52 lb for 100 lb (case); $1.57 lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Indium: 99.9%, $2.25 per troy ounce.

Silver: Open market, N. Y. 70.625 per ounce.

Platinum: $67-$70 per ounce.

Palladium: $24 per troy ounce.

Iridium: $110 per troy ounce.

Rolled, Drawn, Extruded Products

(Copper and brass product prices based on 14.37½c, Conn., for copper. Freight prepaid on 100 lb or more.)

Sheet: Copper 25.81c; yellow brass 23.67c; commercial bronze, 95% 26.14c, 90% 25.81c; red brass, 85% 24.98c, 80% 24.66c; best quality 24.38c; phosphor bronze, grade A 4% or 5%, 43.45c; Everdur, Duronze or equiv., hot rolled, 30.88c; naval brass 28.53c; manganese bronze 31.99c; muntz metal 26.78c; nickel silver 5% 32.38c.

Rods: Copper, hot rolled 22.16c, cold drawn 23.16c; yellow brass 18.53c; commercial bronze, 95% 25.83c, 90% 25.50c; red brass, 85% 24.67c; 80% 24.35c; best quality 24.07c; phosphor bronze, grade A 4% or 5% 43.70c; Everdur, Duronze or equiv. cold drawn, 29.82c; naval brass 22.59c; manganese bronze 25.93c; muntz metal 22.34c; nickel silver 5% 34.44c.

Seamless Tubing: Copper 25.85c; yellow brass 26.43c; commercial bronze 90% 28.22c; red brass 85% 27.64c, 80% 27.32c; best quality brass 26.79c; phosphor bronze, grade A 5% 44.70c.

Copper Wire: Bare, soft, fob eastern mills, carlots 19.89c, less carlots 20.39c; weatherproof, fob eastern mills, carlot 22.07c, less carlots 22.57c; magnet, delivered, carlots, 23.30c, 15,000 lb or more 23.55c, less carlots 24.05c.

Aluminum Sheets and Circles: 2s and 3s flat mill finish, base 30,000 lb or more del.; sheet widths as indicated; circle diameter 9" and larger:

Gage	Width	Sheets	Circles
.249"-7	12"-48"	22.70c	25.20c
8-10	12"-48"	23.20c	25.70c
11-12	26"-48"	24.20c	27.00c
13-14	26"-48"	25.20c	28.50c
15-16	26"-48"	26.40c	30.40c
17-18	26"-48"	27.90c	32.90c
19-20	24"-42"	29.80c	35.30c
21-22	24"-42"	31.70c	37.20c
23-24	3"-24"	25.60c	29.20c

Lead Products: Prices to jobbers; full sheets 11.25c; cut sheets 11.50c; pipe 9.90c, New York, 10.00c, Philadelphia, Baltimore, Rochester and Buffalo, 10.50c Chicago, Cleveland, Worcester and Boston.

Zinc Products: Sheet fob mill, 13.15c; 36,000 lb and over deduct 7%; Ribbon and strip 12.25c, 3000-lb lots deduct 1%, 6000 lb 2%, 9000 lb 3%, 18,000 lb 4%, carloads and over 7%. Boiler plate (not over 12") 3 tons and over 11.00c; 1-3 tons 12.00c; 500-2000 lb 12.50c; 100-500 lb 13.00c; under 100 lb 14.00c. Hull plate (over 12") add 1c to boiler plate prices.

PLATING MATERIALS

Chromic Acid: 99.75%, flake, del., carloads 16.25c; 5 tons and over 16.75c; 1-5 tons 17.25c; 400 lb to 1 ton 17.75c; under 400 lb 18.25c.

Copper Anodes: In 500-lb lots, fob shipping point, freight allowed, cast oval over 15 in., 25.125c; curved, 20.375c; round oval straight, 19.375c; electro-deposited, 18.875c.

Copper Carbonate: 52-54% metallic Cu, 250 lb barrels 20.50c.

Copper Cyanide: 70-71% Cu, 100-lb kegs or bbls 34.00c, fob, Niagara Falls.

Sodium Cyanide: 96%, 200-lb drums 15.00c; 10,000-lb lots 13.00c fob Niagara Falls.

Nickel Anodes: 500-2999 lb lots; cast and rolled carbonized 47.00c; rolled depolarized 48.00c.

Nickel Chloride: 100-lb kegs or 275-lb bbls 18.00c lb, del.

Tin Anodes: 1000 lb and over 58.50c del.; 500-999 59.00c; 200-499 59.50c; 100-199 61.00c.

Tin Crystals: 400 lb bbls 39.00c fob Grasselli, N. J.; 100-lb kegs 39.50c.

Sodium Stannate: 100 or 300-lb drums 36.50c, del.; ton lots 35.50c.

Zinc Cyanide: 100-lb kegs or bbls 33.00c fob Niagara Falls.

Scrap Metals

Brass Mill Allowances: Prices for less than 15,000 lb fob shipping point. Add ¾c for 15,000-40,000 lb; 1c for 40,000 or more.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	12.000	12.000	11.250
Yellow brass	9.875	9.625	9.125
Commercial bronze			
95%	11.250	11.000	10.500
90%	11.125	10.875	10.375
Red brass			
85%	10.875	10.625	10.125
80%	10.875	10.625	10.125
Best quality (71-79%)	10.500	10.250	9.750
Muntz metal	9.250	9.000	8.500
Nickel silver, 5%	10.500	10.250	5.250
Phos. br., A, B, 5%	12.750	12.500	11.500
Naval brass	9.500	9.250	8.750
Manganese bronze	9.500	9.250	8.750

Other than Brass Mill Scrap: Prices apply on material not meeting brass mill specifications and are fob shipping point; add ¾c for shipment of 60,000 lb of one group and ½c for 20,000 lb of second group shipped in same car. Typical prices follow:

(Group 1) No. 1 heavy copper and wire, No. 1 tinned copper, copper borings 11.50c; No. 2 copper wire and mixed heavy copper, copper tuyeres 10.50c

(Group 2) Soft red brass and borings, aluminum bronze 10.75c; copper-nickel solids and borings 11.00c; lined car boxes, cocks and faucets 9.50c; bell metal 17.25c; babbitt-lined brass bushings 14.75c.

(Group 3) Admiralty condenser tubes, brass pipe 8.75c; muntz metal condenser tubes 8.25c; old rolled brass 8.25c; manganese bronze solids: (lead 0%-0.40%) 8.00c; (lead 0.41%-1%) 7.00c; manganese bronze borings, 7.25c.

Aluminum Scrap: Price fob point of shipment, truckloads of 5000 pounds or over; Segregated solids, 2S, 3S, 5c lb, 11, 14, etc., 3 to 3.50c lb. All other high grade alloys 5c lb. Segregated borings and turnings, wrought alloys, 2, 2.50c lb. Other high-grade alloys 3.50c, 4.00c lb. Mixed plant scrap, all solids, 2, 2.50c lb borings and turnings one cent less than segregated.

Lead Scrap: Prices fob point of shipment. For soft and hard lead, including cable lead, deduct 0.75c from basing point prices for refined metal.

Zinc Scrap: New clippings 7.25c, old zinc 5.75c, fob point of shipment, add ½c for 10,000 lb or more. New die cast scrap 4.95c, radiator grilles 4.95c, add ½c for 20,000 lb or more. Unsweated zinc dross, die cast slab 5.80c, any quantity.

Nickel, Monel Scrap: Prices fob point of shipment; add ½c for 2000 lb or more of nickel or cupro-nickel shipped at one time and 20,000 lb or more of Monel. Converters (dealers) allowed 2c premium.

Nickel: 98% or more nickel and not over ½% copper 23.00c; 90-98% nickel, 23.00c per lb nickel contained.

Cupro-nickel: 90% or more combined nickel and copper 26.00c per lb contained nickel, plus 8.00c per lb contained copper; less than 90% combined nickel and copper 26.00c for contained nickel only.

Monel: No. 1 castings, turnings 15.00c; new clipping 20.00c; soldered sheet 18.00c.

Sheets, Strip . . .

Prices not being altered under present uncertainties but production continues at high rate

Sheet & Strip Prices, Page 150

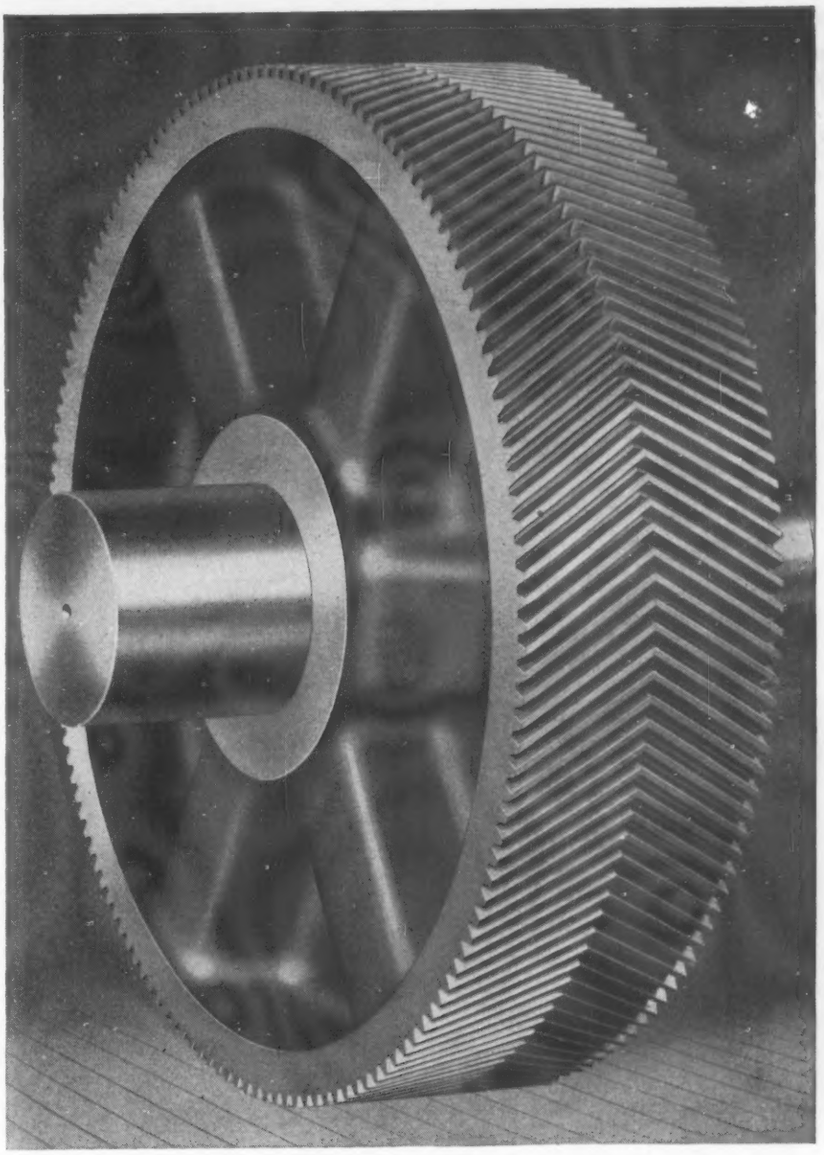
Pittsburgh—No wild stampede toward increase in sheets and strip prices is expected despite the acute shortage in face of record-breaking demand and knowledge that many consumers are willing to pay almost any price. Sheet and strip production is back to normal but most consumers do not expect any substantial easing in current tight supply until late this year. Uncertain price outlook will not have any effect on production for there will be no attempt to retard output to take advantage of a possible price advance. Some sellers state they may have to absorb considerable excess freight as result of dislocated tonnage shipments under Direction 12 to M-21. Present uncertain status of price regulations leaves the question of proposed subsidies on sheet bars and pig iron more involved than ever.

Chicago—Certifications for flat rolled products have totaled more than was anticipated, chiefly from the agricultural implement industry. This is having a disrupting effect on schedules and is causing much concern to consumers not having the right to certify. They fear that their requirements will be set back, which will force their operations into delays and shutdowns. More special case certifications are encountered than was expected. Sheet and strip makers have full order books for the balance of this year and it is feared carryover in 1947 will be substantial. No date has been set for accepting 1947 business.

New York—Delivered prices on cold-rolled sheets continue unchanged despite the freight increase of about 11.3 per cent, effective July 1. This is due to the fact that the basing point on this grade for New York delivery is Buffalo and that New York state has not yet permitted application of the increase to intrastate shipments. However, on hot-rolled sheets and galvanized, both of which are based on Sparrows Point, Md., there has been an increase to 2.685c on hot-rolled and to 4.31c in galvanized. Base prices remain unchanged following the lapse of OPA. Meanwhile, apart from quotas and certain tonnage moving under Direction 12, little buying is taking place because producers generally are sold for the remainder of the year and have not opened books for next year.

Philadelphia — Delivered prices of sheets at Philadelphia have been advanced to 2.615c on hot-rolled and to 4.24c on galvanized, both products for shipment here being based on Sparrows Point, Md., and to 3.635c on cold-rolled, based on Pittsburgh. Demand continues heavy but with sellers having little or none to offer for this year, except through priorities. Producers have not opened books for 1947.

Cleveland — Producers of flat-rolled products have adopted a conservative attitude toward prices and will maintain present levels during this transition period, even on those products which are selling close to or under cost. The certification plan under which manufacturers



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★ Accurate Sykes type gears with their continuous, double helical teeth give increased bearing surface and greater resistance to wear. These and many other features make H & S Herringbone gears economical, smooth and quiet for transmitting power between parallel shafts.

Send note on Company Letterhead for 488-Page Catalog 41

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

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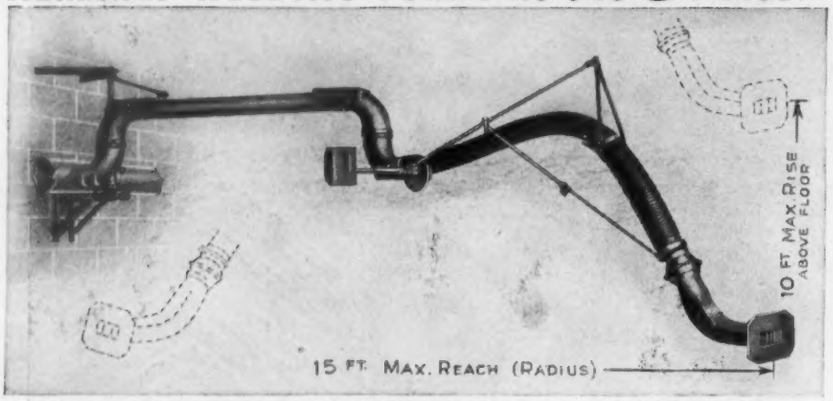
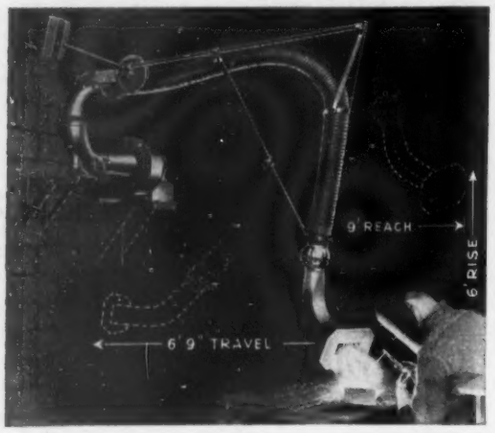
RUEMELIN Fume Collector

REMOVES WELDING FUMES *at the Source!*



PATENTED

LONG REACH MODEL D-5342 — Ideal for large welding booths. Hood reaches out 15 feet from wall. Swivel joints permit inlet hood to revolve in 360° circle for access to all welding positions. Recommended for welding shops having a wide variety of work.



STANDARD MODEL D-5310

Used for standard welding booth ventilation. Hood reaches out 9 feet from wall. A real necessity, especially during winter months when doors and windows are closed.

PATENTED

● Install Ruemelin Fume Collectors to solve your fume removal problem in the most satisfactory manner. Noxious gases, smoke and fumes are drawn away *at the source.* Check these exclusive features:

1. **Guards employee's health against fumes — less welder fatigue.**
2. **Clears shop air with minimum building heat loss.**
3. **Exhaust hood instantly positioned, without using troublesome devices.**
4. **Hood covers maximum welding area, vertically, horizontally and by circle swing.**
5. **Hood equipped with swivelling ball-joint.**
6. **Small amount of electric power used.**

Thousands in daily service in progressive welding shops, metal working plants, railroad repair shops, foundries, structural steel plants, etc. Repeat orders received from many satisfied users. Collectors are available with individual exhaust fans, or with one large fan for multiple collector installations. Engineering data and directions for installing, furnished with each order. Write for Bulletin 37-C and prices.

RUEMELIN MFG. CO.

3882 NORTH PALMER STREET MILWAUKEE 12, WISCONSIN, U. S. A.

MANUFACTURERS AND ENGINEERS
SAND BLAST AND DUST COLLECTING EQUIPMENT

A 4931-2/3

of critical housing and farm machinery were allowed to obtain priority on orders placed with steel mills now provides that manufacturers placing new orders with steel mills must signify approval by reporting to the mill the CPA serial number granting such approval. A Canadian manufacturer must certify to the steel mill on which an order is placed and also to the Canadian priorities officer and to the CPA that the steel obtained on certified orders will be used only to make the products mentioned above.

Cincinnati—Sheet mill carryover into fourth quarter will be heavier than anticipated because of preference tonnages, total of which has not been reported. Otherwise rolling schedules will be rather stable regardless of the price situation developing from the fight on OPA. Inquiry for fourth quarter, on which books have not been opened, and beyond are heavy.

Steel Bars . . .

Preference orders cause disruption in schedules as farm implement, housing needs push to front

Bar Prices, Page 150

Pittsburgh—Midwest producers' production schedules are expected to be disrupted to a greater extent than those of eastern interests as result of Direction 12 to M-21, because of the concentration of farm implement production in that area. One interest at Chicago expects its production on small special bar sections to be taken up nearly 100 per cent on certified tonnage. Full impact of these preference orders cannot yet be estimated except to the extent many customers' orders will be pushed further back, or at least their tonnage allotment will be substantially reduced. Most certification tonnage is expected to fall in August and September schedules as July rollings already have been set up. Some carbon steel bar consumers have had to shut down while others are operating only 3 to 4 days a week, due to the general shortage, particularly in smaller size ranges. Both alloy and carbon bar output are now back to normal. Some mills can offer August delivery on alloys.

Chicago—For the present it is not expected that bar producers will alter current OPA price schedules, preferring to adopt a waiting attitude. Order books on carbon bars are full for the balance of the year, and tonnage for 1947 is not being accepted. Pressure for shipments is strong and insistent, gaining momentum as manufacturing plants step operations up to higher levels. In a few instances, certification of tonnage for third quarter disrupting schedules. Demand for smaller bars and shapes is heavier than for large, causing facilities for the former to be overloaded. Barmakers find difficulty getting enough freight cars.

Seattle—Rolling mills are operating as near capacity as inadequate labor will permit. Present contracts run into second quarter of 1947. Special efforts are made to serve regular customers. Merchant bars are in largest demand, mainly for warehouse stocks and construction. This item constitutes about 40 per cent

of current tonnage, compared with 25 per cent before the war. Northwest Steel Rolling Mills, Seattle has booked 300 tons for highway work and 200 tons for the University of Washington engineering building.

New York—As New York state has not approved the increase of 11.3 per cent in effect July 1 on intrastate shipments of steel in classification territory delivered prices on hot carbon bars in New York City, continues at 2.84c, as prices are predicated on the Buffalo base. However, early approval of the new rate is likely, according to some shippers. Meanwhile bar shipments are brisk, with mill prices unchanged. Except in certain larger sizes of hot-rolled and cold-drawn carbon rounds and flats which still can be had for fourth quarter shipment, and alloy bars, which are available for late August, little new tonnage is being placed, as producers are sold for the remainder of the year and have not opened books for next year.

Philadelphia — Hot-rolled carbon bars have been advanced to 2.86c, delivered Philadelphia, as a result of the recent increase in freight rates. Sellers have little to offer in any grade of bars for this year except in alloys, which still are available for August delivery, and in larger sizes of hot-rolled and cold-drawn carbon.

Steel Plates . . .

Plate Prices, Page 151

New York—Delivered prices on steel plates reflect the recent freight increase of 2 cents to 21 cents from Claymont, Del., now holding at 2.71c. Trading continues brisk for shipment late this year and early in 1947, with clauses providing for prices ruling at time of shipment. No change was made in base prices following lapse of OPA nor were early increases contemplated.

What is believed to be the largest single pipeline order ever placed is reported to have been awarded to A. O. Smith Corp., Milwaukee. It involves 1285 miles of 26-inch diameter pipe for the United Light & Railway Service Co., Davenport, Iowa.

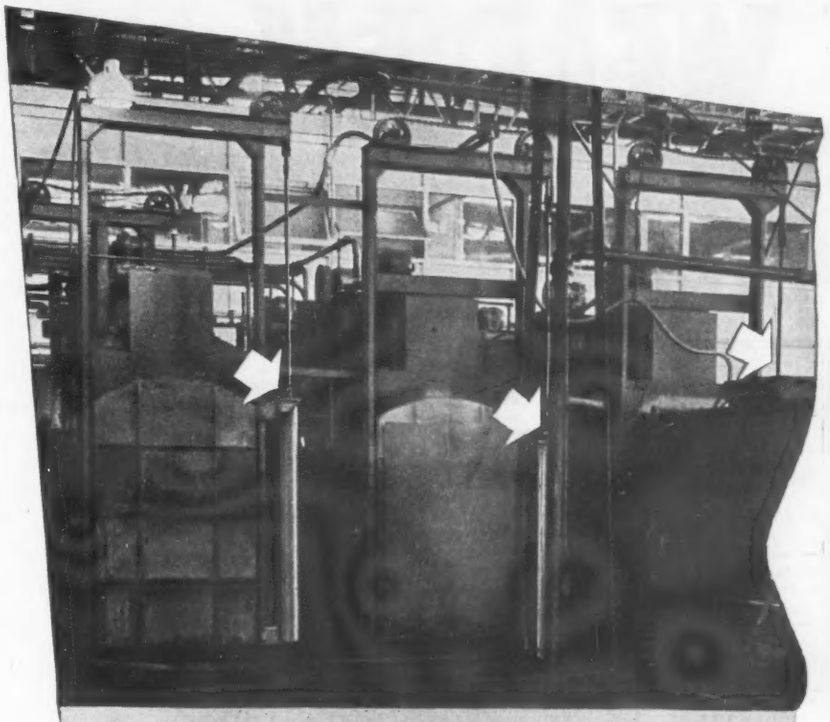
Philadelphia — Producers have been showing more future interest in plates than in any other major product. Several mills now are accepting limited tonnage for first quarter and in one or two instances for early second quarter. However, this advance interest in plates is an exception to the rule.

Seattle—Plate demand is good but fabricators report lack of material is the principal problem. Many small contracts are being placed for tanks and large steel pipe is active. UNRRA has placed contracts for 17 trawler-seiner fishing vessels 85 feet in length, both steel and wooden hulls, with two Tacoma yards. Similar contracts have been placed with a Bellingham, Wash., yard. Oak Lodge, Oreg., has awarded a tonnage of 12 and 16-inch steel water pipe, at $76,063.

Wire . . .

Wire Prices, Page 151

Pittsburgh—Supply of nails, fencing and other merchant wire items should be substantially improved by the end of third quarter if projected summer production can be attained. However, a serious



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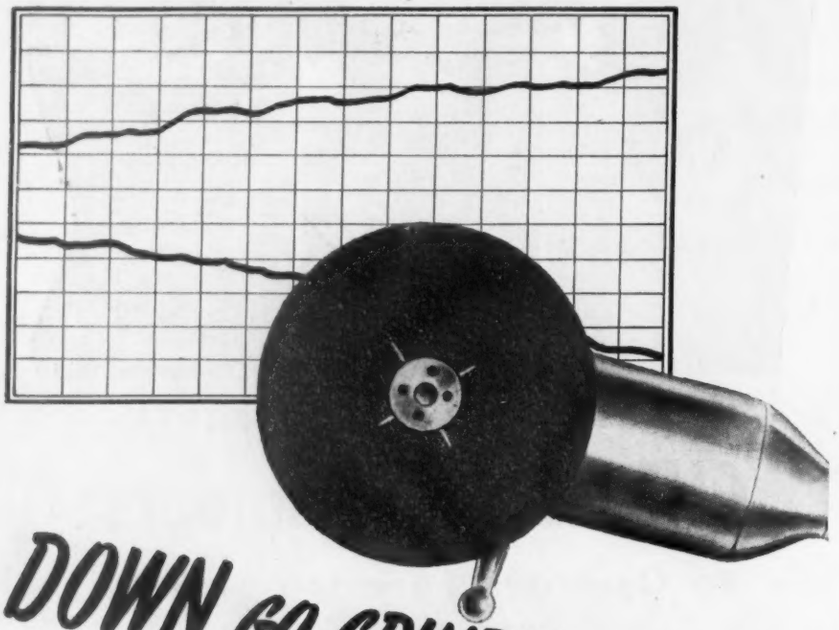

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shortage in these items is expected to exist well into 1947. One interest states output of nails, barbed wire and posts is greater today than at any time in the past 15 years, but is still insufficient. Bale ties in particular are in short supply for it is impossible to increase output without taking away steel from other essential items. The basic fact is that there is a current demand for far greater tonnages of wire than is being produced or can be produced without materially increasing steel producing and wire drawing equipment. Critical shortage of wire rods continues to restrict output of nonintegrated wire producers. In an effort to stimulate production of nails for veterans' housing program, CPA hopes to induce some interests to resume production, perhaps under a subsidy arrrangement.

Chicago—Some of the current shortage of nails can be attributed to lack of railroad cars. One nailmaker here has 45,000 kegs ready and awaiting cars, representing between 2200 and 2800 tons.

Cleveland—Base prices of manufacturers' and merchant wire products remained unchanged following the lifting of price controls July 1. Since practically the entire output of mills continues to be allocated to regular customers with billings based on prices in effect at time of shipment, there was no increased activity on the part of customers to seek earlier than scheduled delivery. Hot mills are stepping up production but output of cold-finishing mills was somewhat lower last week, due to numerous shutdowns for vacations.

Tin Plate . . .

Tin Plate Prices, Page 151

Pittsburgh — Despite steel and coal strikes tin plate producers came within 78,000 tons of meeting all essential first-half food container requirements. The carryover tonnage was 31,000 tons for domestic needs and 47,000 tons for famine relief. Third quarter tin plate production goal has been placed at 900,000 tons, or about equal to entire first-half output. It is expected tin plate producers will be able to take care of other than essential requirements toward the end of third quarter as it is estimated that 85 per cent of third quarter output will be used in food preservation.

Chicago — Inability to obtain adequate freight cars is retarding the flow of tin plate to consumers, this being attributed to the current heavy grain movement from western areas. One tin plate maker has an accumulated shortage of 300 cars as of a week ago. No easing is in sight and some customers have low inventories. An effort is being made to alleviate the situation through use of flat cars and trucks. Export commitments against third quarter directive are heavy. Schedules for August are closed and specifications for September are coming in rapidly. Should congress fail to extend OPA, tin plate is one product which probably would come in for price increase as makers would seek to cover the losses they are sustaining.

Cleveland—No price changes are contemplated in tin plate, following the lifting of government controls, an increase of 25 cents per base box having been authorized by OPA on March 1. Look-

ing forward to a period of uninterrupted production, members of the industry predict that the third quarter output should approximate 900,000 tons compared with an average quarterly output during the first half of 670,000 tons. Practically all tin plate requirements for domestic food production and the foreign food relief program were met during the latter period, falling only 78,000 tons short of meeting all needs. The carry-over of tin plate requirements for the domestic food pack into the third quarter amounted to 47,000 tons. The foreign relief program lacked 31,000 tons of being filled, or a 20 per cent deficit. Even if the third quarter quota is met, it would not allow any considerable relaxation in present CPA regulations which require the channelling of at least 85 per cent of all tin mill production for food containers, pharmaceuticals and other essential uses.

Structural Shapes . . .

With shape inquiry falling off, fabricators have more tonnage than they can handle before first quarter

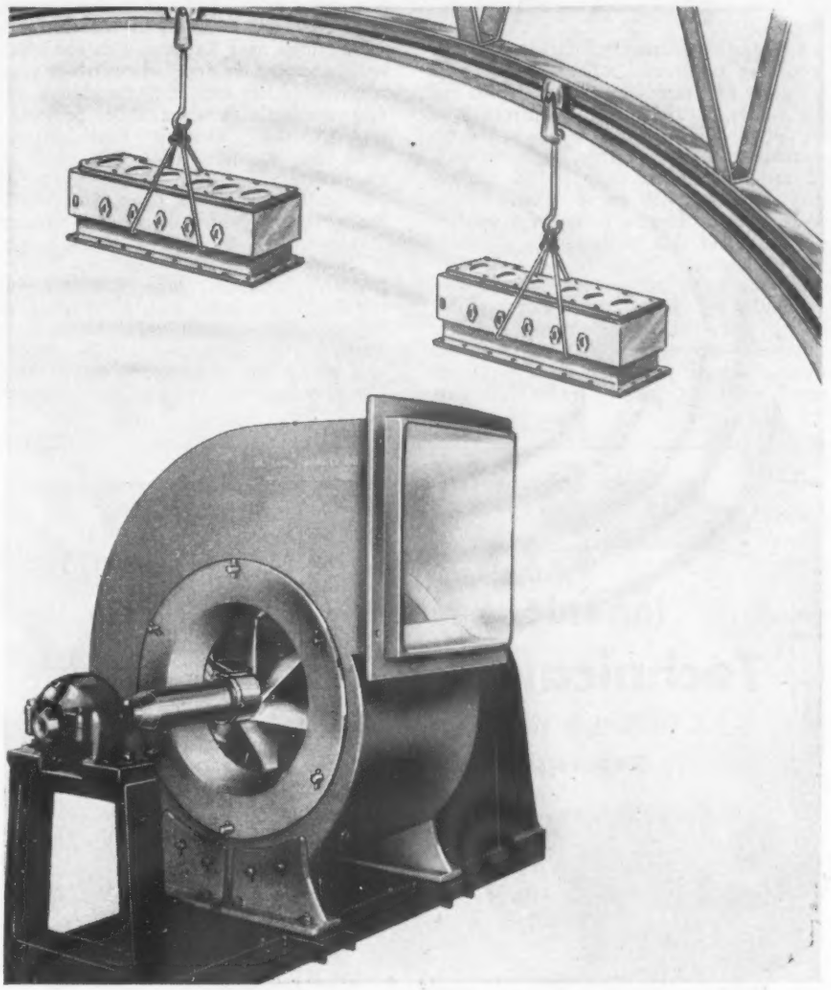
Structural Shape Prices, Page 151

New York — Although new inquiry has fallen off, structural fabricators report that there is still more tonnage active than they can figure for erection in the time specified. Most fabricators, in fact, can accept litte work for facbrication much before the first quarter of next year, especially in view of the extended deliveries now being offered on shapes.

Especially active are bridges, tunnels and other public works which are exempt under CPA limitation. Variety jobs of this description are being figured in the New York territory, including sections of the Brooklyn-Battery tunnel. At the moment one section involving 1000 tons of structurals and 6000 to 7000 tons of cast segments and other metal products is active on the Manhattan side, with a small contract just placed for work on the Brooklyn side. Another public works job involves 500 tons of structurals and 500 tons of plates for the New York municipal water supply system, orders just placed.

Also, in addition to public works are several industrial projects, for which CPA approval has been granted. The largest pending job involves 2000 tons for a chemical plant in Raritan, N. J., and the largest industrial award reported here recently involves 1800 tons for a pulp and paper plant in Pensacola, Fla. At least two industrial awards in the general New York district have also been placed recently, although much smaller.

Pittsburgh — Fabricators have near record order backlogs and most promising potential business in years, but work is delayed by general steel shortage. Some fabricators are concerned over the ratio for recent CPA approvals to rejections, for now that mills are back to normal operations, fabricators expect to make considerable headway against order backlogs. During the period May 23 through June 27, CPA office here approved only 20 per cent of projects, while in the preceding two months this ratio was reversed. Carry-



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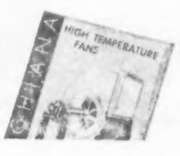

over tononage represents about 11 weeks' output.

Chicago — Structural fabricators are becoming concerned whether they will be able to keep facilities occupied in the coming months. Most current jobs are small and designed for light-weight sections. Mills, therefore, are overloaded on their lighter mills, which means that shipments will suffer delay. Certifications are affecting mostly the smaller products and this is the main cause of the congestion. New structural inquiry continues light.

Seattle — Fabricating shops report lack of material the principal handicap, available inventories being used for most essential jobs. A steady run of small contracts, mainly under 100 tons is coming in. The largest pending tonnage involves 17,000 tons for the Narrows bridge near Tacoma, bids for which will be called in September, when prospective bidders expect to be able to obtain material. Potholes Dam project, a unit of the Columbia Basin project, will require about 100 tons, bids to Reclamation Bureau, Denver, July 25. The same agency will open bids July 22 for a 70-ton gantry crane and auxiliary 20-ton trolley.

Boston — With more semifinished available structural mills now are rolling in high volume and, although filled beyond first quarter on some sizes, heavy output sustained at the present and scheduled rate might dent backlogs for openings in first quarter. Inquiry for fabricated steel is slowing, reflecting tighter restrictions on nonhousing construction. About half the 1000 tons for bridges has been awarded, with Stone & Webster again placing tonnage against construction and engineering contracts, have negotiated several thousand tons additional. Deliveries on fabricated material range to February on lots of 400 to 500 tons. Small tonnages are taken by district fabricators at much nearer dates, plain material being picked up from stock or by shopping. This is becoming increasingly difficult, however, as available spot supply of plain shapes is disappearing.

Philadelphia — Delivered prices on shapes at Philadelphia have been increased to 2.48c as a result of the freight rate advance. Structural activity is relatively light. CPA reports for the period from June 21 to June 27, inclusive, the approval of 20 projects with total value of $396,391 and disapproval of 25 projects with total value of $352,957.

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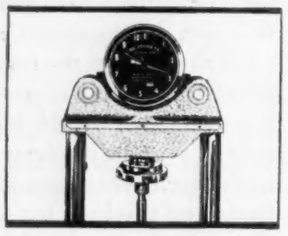

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Tubular Goods . . .

Tubular Goods Prices, Page 151

Boston—Only alloy tubing deliveries approach normal, six to eight weeks, with pipe and other tubular products, notably butt-weld, extended through this year. Demand is heavy and distributor inventories limited and unbalanced. Fabricators using tubing are forced to accept what is available first and this includes some substitution of electrical welded instead of light-walled butt-weld or bedstead grades. For some products consumers have gone to aluminum. Butt-weld pipe deliveries are more extendend than seamless and tonnage allocated for May has not been shipped in some instances. General rescheduling of boilers tubes and seamless mechanical tubing is under way with delivery position still indefinite. Few certified orders for pipe for conventional heating installations have appeared but any tonnage for that category will fall into September.

Seattle—Cast pipe demand is strong but sellers are unable to promise definite delivery and many projects are being held back. Tacoma, Wash., has approved a $68,748 Madrona Way improvement. Oak Lodge, Oreg., has let contract to Pacific States Cast Iron Pipe Co., low bidder at $67,667, for a tonnage of 6-inch pipe.

Bolts, Nuts . . .

Bolt, Nut, Rivet Prices, Page 149

Pittsburgh — Pending determination of government policy with regard to price control, producers have raised prices on bolts, nuts, screws and rivets to full extent permitted under Amendment 3 to RPS-147. The amendment, effective July 1, permits a price boost in above items of 12 per cent over the Oct. 1-15, 1941, levels, at same time revoking an increase of 7 per cent effective April 1. No instance is reported of producers raising prices above this level and prospects are that they will not in near future. Sellers state that no additional action will be taken until profits under present price levels can be determined and official government policy in respect to price controls deter-

mined. Some producers have been shut down in recent weeks, while others are on sharply reduced schedules, due to steel shortage. Outlook for increased mill shipments is not promising until after July 15, and even after that date a critical shortage is anticipated through third quarter. Small bars and nut flats are in particularly short supply. Bolt and nut manufacturers state order backlogs, said to average about 7 months, continue to expand, due to reduced production.

Pig Iron . . .

Price changes await final action on OPA. Supply up but not equal to demand

Pig Iron Prices, Page 153

Pittsburgh—No action on advancing pig iron price is expected until subject of price controls is permanently settled. The industry was in line for an increase due to higher iron ore and coke prices and the advance was to be made retroactive to May 29. Should price ceilings be definitely discarded an advance of $1.50 to $2 a ton in pig iron is expected, although there would be some question as to whether sellers could legally make the increase retroactive. The CPA pig iron allocation order, expected to be effective Aug. 1, is in process of formulation. This plan channeling pig iron into foundries serving the household equipment and farm implement industries is expected to create an additional iron shortage for manufactures of ingot molds, job foundries and other interests in this area. Further upturn in pig iron production occurred last week with 49 out of 54 units now pouring iron.

Chicago—Pending congressional action on continuance of OPA, tendency appears to be that pig iron will hold its present price level. Foundries in this area continue short of iron, but many shops have closed for vacation but will take in supplies arriving during the period. As of last weekend, 36 of the district's 41 blast furnaces were in operation, two more than were active when the coal strike came at the beginning of April. However, steel mills are so short of scrap that hot metal must make up the deficiency, which means that foundries are not getting the amount of pig that current blast furnace operations would suggest.

Seattle—Foundries are moderately busy on many small jobs, which furnish a fair backlog. Cast scrap and pig iron supply are ample, the former moving at the $20 ceiling. Melters are using the normal ratio of 70 per cent scrap.

Cincinnati—The foundry melt last week was lower, because of vacations, some confined to the holiday and the remainder of the week, others more extended. Pressure for pig iron deliveries continued strong with furnace interests unable to predict when shipments would reach prestrike levels. An indication of the tight market was the ignored pleas for iron by a new foundry in the district; furnaces are hard pressed to care for old customers and are not seeking new business.

Boston—Athough several thousand tons per month are likely to be added to the total by two producers to current source of supply, melters are not likely

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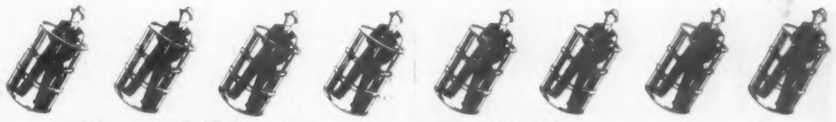

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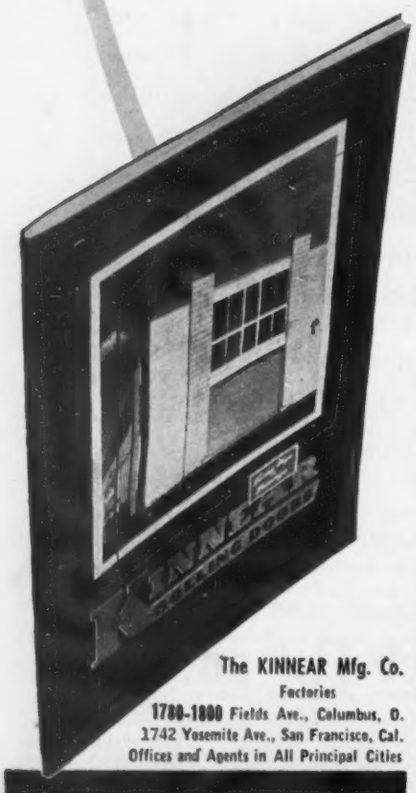

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to get more than a third of the pig iron requested for third quarter and that will be spread thinly. Furnace production and shipments are heavier but to distribute the iron as widely as possible individual allocations are sharply restricted. The Troy, N. Y., furnace will be a July producer and one eastern steelworks is expected to supply more merchant iron, but deliveries scheduled beyond July will be affected by expected certified orders covering products for housing. Meanwhile, several industries are badly in need of finished castings. Many foundries are down for vacations or on reduced melting schedules. The normal 60-40 ratio has been steadily reduced, with the scrap charge increasing until in some cases the pig iron has dropped to 25-30 per cent. Shortage of scrap, however, is tending to retard this in some cases.

Philadelphia—Except for an increase in freight rates, pig iron prices are unchanged. Immediately before the lapse of OPA negotiations for substantially higher prices were under discussion.

Cleveland — Prior to the demise of OPA, Republic Steel Corp. was granted special dispensation by that agency to advance Birmingham base prices for foundry and basic pig iron $4 a ton, effective as of June 19. Another southern producer advanced prices $3 a ton, effective as of July 2. Pending clarification of the situation, the Birmingham market is quoted unchanged at $22.88 per gross ton for No. 2 foundry, $21.50 for basic, and $27.50 for bessemer.

Buffalo — Merchant iron sellers are shipping against contracts but are refusing new orders, pending definite understanding of OPA's future. There is considerable uncertainty as to prices if controls are lifted permanently, forecasts of increases ranging from $1.50 to $4 per ton. Pig iron output here has reached 75 per cent of capacity as Bethlehem Steel Co. relighted its sixth and last stack, on basic, and M. A. Hanna Co. blew in a third unit. Republic Steel Corp. plans to start a third stack within a week.

Scrap . . .

OPA uncertainty dries up supply and prices remain unchanged until definite basis is reached

Scrap Prices, Page 154

Cleveland—Scrap interests are holding the line on prices during the uncertain period while OPA is in the balance. Supply is short, far below needs of melters, but large producers have sold their output for July instead of holding for a possible rise. Some smaller dealers are holding back material, but this a small part of the supply. Melters are pressing for deliveries but scrap is unobtainable in quantity except from industrial producers and railroads. Some of the latter have postponed offerings because of uncertainty.

Pittsburgh—Trade interests do not expect an upward trend in scrap prices until price control question is permanently settled, although it is believed higher prices, particularly for remote areas, is inevitable, due to rising collection and preparation costs and general acute shortage. Meanwhile shipments under contract are continuing at former price ceilings. New scrap purchases have been temporarily halted due to uncertain price outlook. Some large consumers state they will not buy scrap above ceiling levels so long as the question of price controls remains uncertain. Indicated overall steel shortage this summer will prevent most metalworking companies from reaching normal production schedules, which in turn will limit supply of industrial scrap. CPA is going ahead with its scrap collection drive, concentrating on scrap from farm areas, refineries and industrial plants.

St. Louis—Scrap shipments have declined steadily the last two weeks and all movement is expected to stop this week pending congressional decision on revival of OPA. Shippers who recently have been holding back for an expected price change are likely to deliver no scrap now until the OPA situation clarifies. Mills also are waiting developments this week, reluctant to set new prics in fear a new law may make new ceilings retroactive. Reserves here, however, are in good shape, averaging 90 days.

Birmingham—Scrap dealers and consumers are attempting to reach some price basis on which to do business following termination of OPA. What prices will be and when they will become stabilized is uncertain.

Seattle—The situation in scrap is tighter but mills have sufficient for current needs. Higher ceiling has brought out additional tonnage but recently shipments have been lighter. Inventories are about normal. British Columbia dealers were given permits to ship to Seattle but these have been rescinded and Canadian surplus is now reported going to Algoma Steel Co.

Cincinnati—Temporary easing in the demand for scrap iron and steel arose from foundry vacations last week, timed to include the holiday. One major melter went down for two weeks. The price situation was confused. There was a general disposition to hold to OPA prices until the market condition was clarified but a few reports drifted in quickly about over-ceiling deals. Available tonnage is so scarce that some well-fortified melters are now depending heavily on reserve stocks of scrap.

New York—Scrap trading dropped almost to a standstill following expiration of OPA. Some industrial scrap is moving at recent OPA prices but little is coming from scrap yards as dealers wait clarification. Consumers are pressing sellers for tonnage at levels set by OPA but do not appear interested in tonnage at higher prices and as far as can be learned no important tonnage have been offered consumers at higher levels.

Chicago — Interruption of OPA, whether temporary or permanent, has unsettled the scrap market here by restricting flow of material. Mills, dipping into reserves and desperately in need of melting material, are seeking to acquire new tonnage and are offering ceiling prices. Sellers, on the other hand, show a disposition to hold supplies, pending some break in direction of higher prices. As far as can be determined, there have been no transactions at above ceiling prices. On old orders, tonnage is moving in fair volume currently, but was expected to slacken during latter half of the week because of

the holiday. Some yards, with small amounts of material to prepare, were to be down from Wednesday on. A number of foundries closed down for two weeks from July 1 for the annual vacation period but arranged to take in such raw materials as arrived.

Buffalo — Lack of scrap supply is causing expectation of furnaces being shut down as end of OPA control has practically stopped deliveries from dealers, some disagreement resulting over question of dealers filling existing orders at old ceilings. No sales have been reported so far above these ceilings. With shipments stopped melters are using from reserve. A cargo of 5000 tons has arrived from the upper lakes, but water shipments this year have been disappointing.

Boston — Scrap prices have broken through former ceilings in scattered transactions, although the disposition of most dealers is to hold the line until the pattern of price control is clarified. Numerous scrap consumers are down or on reduced melting schedules but have not held up shipments. Bids on unprepared scrap, estimated accumulations at the Boston navy yard, were well over the nominal ceiling, the highest yet offered. Industrial scrap production is at a low point and is expected to come back slowly.

Warehouse . . .

Warehouse Prices, Page 152

Pittsburgh — Steel distributors report only a slight improvement in mill shipments but expect more substantial relief soon. However, it does not necessarily follow that mills are obliged to increase shipments in the same proportion on all items, particularly those in critically short supply such as sheets, small structurals and bar shapes. Distributors state sales are off at least 25 per cent since early this year because inventories are lowest in year. Stocks of galvanized sheets, hot and cold-rolled sheets in light gages, wide-flange beams and bar shapes are nearly depleted in most instances. It is in just these items the heaviest demand exists.

Chicago — Warehouses report some slackening in demand, part being due to the fact that mills are now well back to normal operations. Volume of orders is holding well, indicating that distributors soon will be back on a normal basis. In line with the CPA allocation program, it is expected that mills will supply warehouses in third quarter with tonnage equivalent to last quarter, 1945, minus production losses occurring during the period. Product mix, however, will vary widely.

St. Louis — Demand for warehouse steel continues high, with inventories continuing to decline. Mill deliveries are three months behind schedule. Light plates, sheets and structurals are in extremely tight supply with alloys a trifle easier. Bars in all sizes are scarce. Warehouses are hopeful shipments will begin to improve next month.

Seattle — Demand for all steel items out of stock continues strong, with galvanized sheets most critical. Deliveries from eastern mills are slow and it is impossible to serve all inquirers. The Navy has directed Puget Sound yard to dispose of a portion of its surplus nails but how

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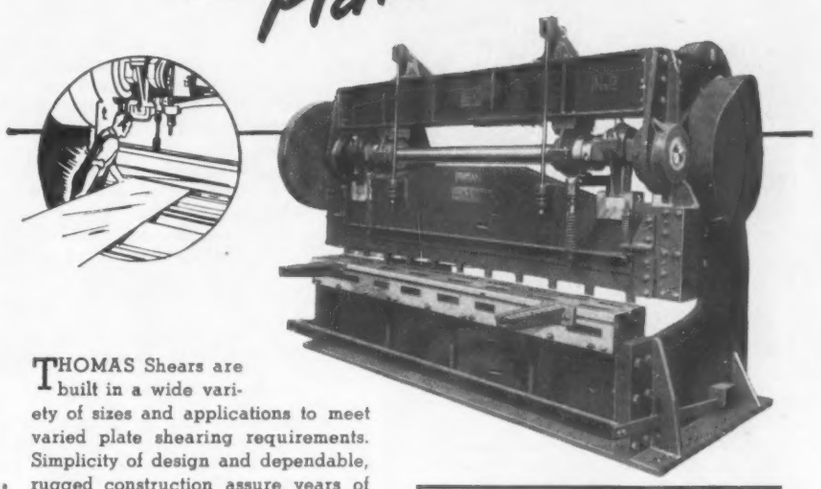
MILL TYPE Plate Shears



THOMAS Shears are built in a wide variety of sizes and applications to meet varied plate shearing requirements. Simplicity of design and dependable, rugged construction assure years of maintenance-free operation. *Write for Bulletin 126.*

THOMAS
MACHINE MANUFACTURING COMPANY
PITTSBURGH, 23, PA.

6

HANNATEN IRON INGOT

THE BEST KNOWN NAME IN IRON

10 POUNDS

10 POUNDS . . . for easier handling, more accurate control of the charge, finer grain structure of the iron. That's the story of the new HannaTen ingot, available in all grades of Hanna iron. Take advantage of this important development in "better iron for better castings" . . . from Hanna.

GRADES:
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The Hanna Furnace Corporation
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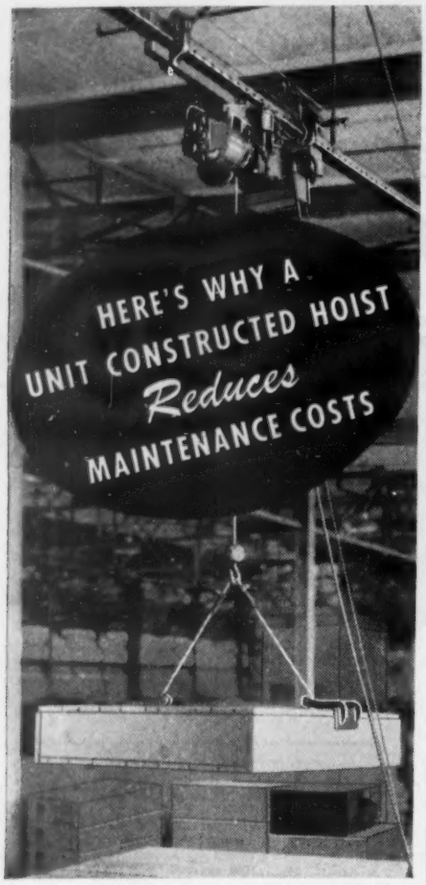

● Maintenance men know from experience how little it costs to service a hoist that is simple in design. That's why it will pay you to switch to the simple construction of a Reading UNIT CONSTRUCTED Electric Hoist.

The hoisting unit in a Reading Electric Hoist has only four moving parts. The result is fewer wearing parts, fewer parts for you to overhaul or repair. Then too, each one of the four hoist units—suspension, motor, control and hoisting units, can be removed for maintenance purposes without the time-consuming "break-down" of any other unit.

Assure yourself of these cost-reducing advantages—contact your nearest Reading Hoist distributor, today. And for full details on the Reading UNIT CONSTRUCTION Plan, write us for your free copy of "144 Answers To Your Hoisting Problems."

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READING HOISTS

much this will relieve the situation is uncertain.

Cleveland — Prices of products for which Cleveland is a base held unchanged at the warehouse level while those for which city is not a basing point increased the full amount of the higher freight rates effective July 1. New warehouse steel prices are 3.88c per pound for delivery within the Cleveland switching limits for structural shapes; 5.48c for floor plates; and 5.347c for galvanized sheets, 17 gage base. Shipments from the mills have improved recently but stocks are still unbalanced. The shortage is especially acute in sheets, strip and structurals with somewhat better supply in cold finish materials and alloy products.

Cincinnati—Warehouse sales were off during June because of inability to maintain balance in stocks. Structurals and sheets, for example, are far below demand. The outlook for better mill shipments in July, especially in the most critical items, was clouded.

Reinforcing Bars . . .

Reinforcing Bar Prices, page 151

Pittsburgh—Most producers continue to restrict production of reinforcing bars to permit greater output of more profitable carbon steel bar items. One mill's steel allotment for July is less than half allocated last December. This interest has an eight-month backlog of firm orders on basis of July production and could be booked through first half if all tonnage offered was accepted. Increased warehouse load and housing requirements under Direction 12 to M-21 will run about 15 per cent of third-quarter concrete bar output. One producer reports receipt of a CPA directive involving 600 tons for a New York housing project.

Lake Superior Ore Tonnage Shipments off from 1945

Shipments of Lake Superior iron ore from upper lake ports in June totaled 8,654,437 gross tons, a decrease of 1,966,872 tons from shipments in the like month a year ago. Shipments to the end of Jnue this year totaled 13,000,454 tons, a drop of 16,024,132 tons compared with the like period of 1945.

Nonferrous Metals . . .

Nonferrous Prices, Page 156

New York — St. Joseph Lead Co. and American Smelting & Refining Co. advanced lead prices last week to the basis of 9.50c, New York, or 1.25 cents over the old OPA ceiling level. In making the announcement, Clinton H. Crane, president of St. Joseph Lead Co., said that at this price mining companies will be receiving no more than they were receiving, "in fact many of them not so much," as they had been getting under the premium price plan which expired June 30.

American Zinc, Lead & Smelting Co. advanced prices for prime western zinc to the basis of 9.50c, fob East St. Louis, with other grades at the customary premium. This is an advance of 1.25 cents a pound over the old ceiling price.

Removal of price controls on all major nonferrous metals adds confustion to an already burdened fabrication industry and is delaying distribution of primary copper, zinc and tin. Electrical and jewelry industries are hampered by lack of silver, with black market transactions reported in the latter.

An important point to be clarified is what price will apply to copper from the government stockpile, estimated as upwards of 70,000 tons.

Metallurgical Coke . . .

Coke Prices, Page 151

Pittsburgh—Connellsville district coke operators have increased beehive foundry and furnace machine-drawn coke $1.25 per net ton and hand-drawn furnace and foundry grades $1.35 per ton, effective on shipments of July 1. The rise was based on higher wage costs. The higher prices will remain in effect until OPA is reinstated. The advance is said to be about that which was on the verge of OPA approval. Operators are not making the increase retroactive on shipments from May 16 to June 30, on the basis that it is up to OPA to establish the price for that period. The recent increase of $1.35 per ton on by-product coke granted by OPA, was made retroactive to May 16.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2750 tons, warehouse and office building, Evanston, Ill., for Hibbard-Spencer-Bartlett & Co., to American Bridge Co., Pittsburgh; Engineering Systems Inc., Chicago, architect and engineer.

1800 tons, factory buildings, Alabama Pulp & Paper Co., at Pensacola, Fla., through L. Morris Mitchel, to Virginia Bridge & Iron Works, Roanoke, Va.

500 tons shapes, New York Board of Water Supply, Gas & Electricity, New York, to American Bridge Co., Pittsburgh; also 500 tons of plates, to Commercial Sheet & Stamping Co., Youngstown, O.

450 tons, rotogravure building for *Philadelphia Enquirer*, to Phoenix Bridge Co., Phoenixville, Pa.

450 tons, plant addition, Neptune Meter Co., Danbury, Conn., through Thompson Starrett Co., New York, general contractor, to Utica Structural Steel Co., Utica, N. Y.

340 tons, addition, water treatment plant, Indianapolis Power & Light Co., to American Bridge Co., Pittsburgh.

260 tons, contract No. 1, highway connection on Brooklyn side of Brooklyn-Battery tunnel, New York, to American Bridge Co., Pittsburgh.

250 tons, plant building, DeLaval Separator Co., Poughkeepsie, N. Y., through L. H. Swensen, to American Bridge Co., Pittsburgh.

STRUCTURAL STEEL PENDING

17,000 tons Narrows bridge, Tacoma, Wash.; bids planned for September at Olympia, Wash.

15,900 tons, new plant, Rock Hill, S. C., for Celanese Corp. of America.

6000 tons, construction trestle, Hull Shore dam, Cotter, Ark., for U. S. Engineer.

5340 tons, bridges and grade separations, Maine Turnpike Authority, Section 1, Kittery to Portland; bids July 25, Kennebunk, Me.; also 62,130 lineal feet steel piling.

3080 tons, transmission towers, Amory, Miss., for TVA.

2000 tons, nylon plant, Chattanooga, for E. I. du Pont de Nemours & Co. Inc.

950 tons, power house for Pacific Gas & Electric Co., Bakersfield, Calif., Stone & Webster Engineering Corp., Boston, engineer-contractor.

340 tons, bridge, Charleston, Miss., for state highway department.

300 tons, hangar at Logan Airport, Boston.

300 tons, addition to a duPont plant at Orange, Tex.; bids asked.

200 tons, building for Johns-Manville at Tilton, N. H.; H. A. Kuljian & Co., Philadelphia, engineer and constructor.

100 tons plus, trashracks, gates, etc., Potholes Dam; bids to Reclamation Bureau, July 25.

Unstated, hangar, warehouses and other facilities, Fort Richardson, Alaska; general contract to Birch-Johnson-Lytle Co., Seattle.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1212 tons, canal siphon, Columbia Basin project; Terteling & Sons, Boise, general contract; materials by government.

300 tons, highway projects, Washington state, to Northwest Steel Rolling Mills, Seattle.

200 tons, University of Washington engineering building, Seattle, to Northwest Steel Rolling Mills, Seattle.

200 tons, dormitory, Northfield, Minn., for St. Olaf's College, to Hustad Co., Minneapolis.

120 tons, expansion, Lorain, O., for National Tube Co., to Carnegie-Illinois Steel Corp., Pittsburgh.

100 tons, expansion, Janesville, Wis., for Mercy hospital, to Joseph T. Ryerson & Son Inc., Chicago.

REINFORCING BARS PENDING

2735 tons, bridges and grade separations, Maine Turnpike Authority, Section 1, Kittery to Portland; bids July 25, Kennebunkport, Me.

1625 tons, expansion to tin mill, Gary, Ind., for Carnegie-Illinois Steel Corp.

900 tons, Erie Throughway, Chautauqua, N. Y.

253 tons, gas storage container, East Chicago, Ind., for Public Service Co. of Northern Indiana.

161 tons, Ohio state highway letter; bids June 25.

145 tons, paving and bridges, Washington county, Pa.

125 tons, also 100 tons gates, trashracks, etc., Potholes Dam, Columbia Basin project; bids to Reclamation Bureau July 25.

100 tons, highway project, King county, Wash.; bids to Olympia, July 9.

50 tons, also miscellaneous metal items, Descutes project; bids to Reclamation Bureau, Bend, Oreg., July 15.

PLATES . . .

PLATES PLACED

Unstated, water system improvement, 16 and 12-inch pipe for Oak Lodge, Oreg., to Oregon Culvert & Pipe Co., low at $76,063.

Unstated, 17 trawler-seiner fishing vessels for UNNRA, both steel and wood, to yards in Tacoma and Bellingham, Wash.

PLATES PENDING

200 tons plus, 186-foot stern wheel tug for Port of Portland, Oreg.; bids Aug. 23.

CAST IRON PIPE PLACED

Unstated, 6-inch water pipe for Oak Lodge, Oregon; to Pacific States Cast Iron Pipe Co., low at $67,667.

RAILS, CARS . . .

RAILROAD CARS PENDING

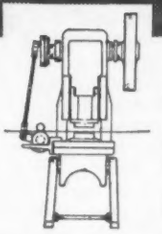
Central of Georgia, 200 to 400 wood pulp cars.
Western Pacific, 250 forty-ton box cars.

LOCOMOTIVES PLACED

Russia, 13 five-foot-gage 2-10-0 type locomotives, to American Locomotive Co., Schenectady, N. Y.; practically duplicates a large number sent to Russia during the war; locomotives are scheduled to be completed in December.

LITTELL STRAIGHTENING MACHINE

for Straightening and Feeding COIL STOCK



REQUEST BULLETINS

FASTER feeding, greater accuracy, improved quality—with Littell press-room equipment. One example, the Littell new-style Continuous Straightening Machine shown. Mounted on fully enclosed steel base, portable, control arms for regulating loop of stock. Pinch rolls 3½" dia. by 8½" long for stock up to 8" wide. Other units for wider stock. Standard speed, 10' to 60' per min. Floor space, 17" x 36". Littell No. 3 Automatic Centering Reel shown, capacity 300 lbs. Littell also makes other press-room units.

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Merchant Iron in Your Specification Ranges.

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PITTSBURGH COKE & CHEMICAL COMPANY
GRANT BUILDING · PITTSBURGH 19, PA.
Plant: NEVILLE ISLAND, PITTSBURGH, PA.

Surplus Tool Sales Hampered by Red Tape

Licensed dealers denied commissions on sales. Too much material held for priority. Prices on many machines too high to bring sales. Industrial buyers meet many difficulties

Detroit — Disposal of vast quantities of surplus machine tools and equipment by the War Assets Administration, snarled by priorities, red tape and gross inexperience on the part of government personnel handling the problem, has been further confused by the ruling of the comptroller-general forbidding the WAA to pay dealers commissions. Larger dealers are not too concerned over the ruling, say it probably springs from misinterpretation of the surplus disposal act, but believe the ruling may be enforced for a month or so pending a restudy of the matter.

There are about 400 licensed dealers in surplus equipment in this area, while there are only some 80 established machinery dealers whose annual business amounts to much. It is felt there has been considerable padding of licenses, and the revocation of commissions may serve to shake out some of those who do not belong in the business anyway. Some are reported to have acquired licenses to handle only one deal, just to net the 12½ per cent commission.

Latest reported plan of the WAA was to enlist the services of engineering management companies to work out a more orderly disposal routine in various districts. George Fuller Co., New York, for example, is understood to have been assigned to Utah in the disposition of some $24 million worth of equipment there.

Far too much equipment is being tagged "hold for priority" in the opinion of major dealers here. This results from inexperienced personnel who find it easier to follow this policy than to look for legitimate inquiries for equipment. Another serious difficulty, with respect to veterans who have priorities to buy, is that little information is available on exact specifications of machines veterans want, or how much they are prepared to pay.

Too often veterans hold the mistaken belief the government is going to give them surplus equipment gratis. A case is cited of a Muskegon veteran who inquired for a 2500-ton press. One was located and the veteran was contacted by telephone. His wife answered and said her husband was at work in his shop. When she was told the original price on the press was $200,000, she nearly fainted and said to forget the whole deal, since she and her husband between them had only $750 cash.

Since most equipment being sold to veterans is in the $200-$600 price class it has been suggested that no tools be held for veterans priority beyond the $2500 price level; this suggestion was rejected. Not over 50 per cent of inquiries from veterans result in sales, and it is the opinion of one machinery representative here that most veterans are more interested in operating the machines for someone else than in acquiring them personally.

Industrial buyers seeking to purchase surplus items run into mountainous red tape, clerical inefficiency and continual difficulty in locating the actual machines in which they are interested. Many of them prefer either to turn the problem over to established dealers who are more familiar with the routine involved, or to buy new equipment. Possibly this is one reason why backlogs of new equipment orders are so high.

Further difficulties are being experienced in disposal of specially equipped machines, where the WAA is adhering hard and fast to pricing formulas. Thus, a $9000 Cone automatic with an extra $7000 worth of tooling interests no one when the price is figured against an original cost of $16,000.

Many infractions are noted against the rule forbidding buying surplus equipment for resale. The WAA apparently is equipped with no system to check such practices, even though simple procedures like requiring truckers to return delivery slips have been suggested.

The entire surplus disposal project is muddled and growing worse. It is likely steps may be taken to get congressional action for an investigation or a revision of methods, but as long as the matter is so closely tied to politics and governmental regulations there is little chance for any business-like procedures to be adopted and followed.

Boston—Unit production of machine tools held up well in first half, considering shortages of parts and components and return to normal work week for the most part, with elimination of overtime. Nevertheless high production costs are a factor in profit margins and some further advance in price on some lines appears justified. New orders have declined but cancellations have not reached serious proportions. However, it is apparent that considerable machinery expected to be bought earlier in the year has not been placed. Buying by automobile plants is in this category and while orders for special purpose production tools for that industry have been substantial some volume has not materialized. Orders for some of these tools are not expected to be definitely placed until next year or until the general industrial atmosphere has cleared.

Cincinnati — Machine tool manufacturers appeared to take a sideline position, at least for the present, in the OPA fight. At least, no price adjustments were imminent as in consumer goods. Increases in prices during recent months were variable, some tools being tagged 5 per cent higher, others going to full allowance of 20 per cent. The effect of whatever advances in costs, due to dropping of OPA, may develop, remains to be seen.

Inquiries on standard tools, by domestic buyers, tend duller while most district factories find level of foreign interests still keen.

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General Purpose
Dredging and Hard Digging
Dragline
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*Hook-on Type
Ore Handling
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4-Rope
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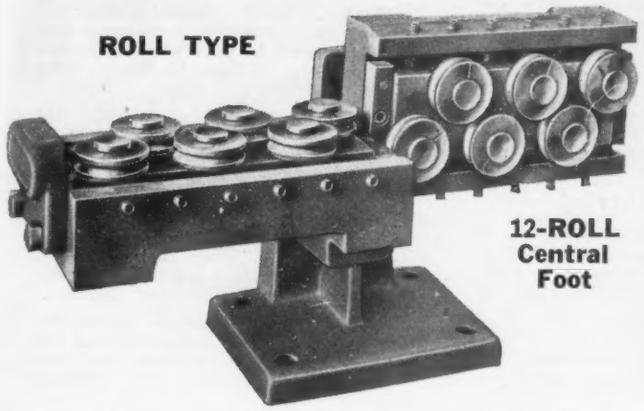
ERIE, PENNSYLVANIA
Aggre Meters • Buckets • Concrete Plants • Traveling Cranes

Two Wire Straighteners
WITHOUT CUTTERS

ROLL TYPE



12-ROLL Central Foot

The Roll Type shown above is generally used with automatic machines. The wire is drawn through the straightener to remove the natural curve and put it into better shape for the forming dies. Made in sizes from 1/16" to ½".

The Rotary machine shown below has no feeding attachment. The wire is pulled through mechanically while the head revolves at high speed. Made in sizes from 1/16" to ⅜".

In the case of either of these machines, the size indicates the maximum diameter of wire that can be handled, but several smaller sizes can also be worked.

Glad to send further information. It will help us in recommending a suitable die material if, when writing us, you give the diameters and kinds of wire you wish to straighten.

ROTARY TYPE

The F. B. Shuster Mfg. Co., Inc., New Haven, Conn.

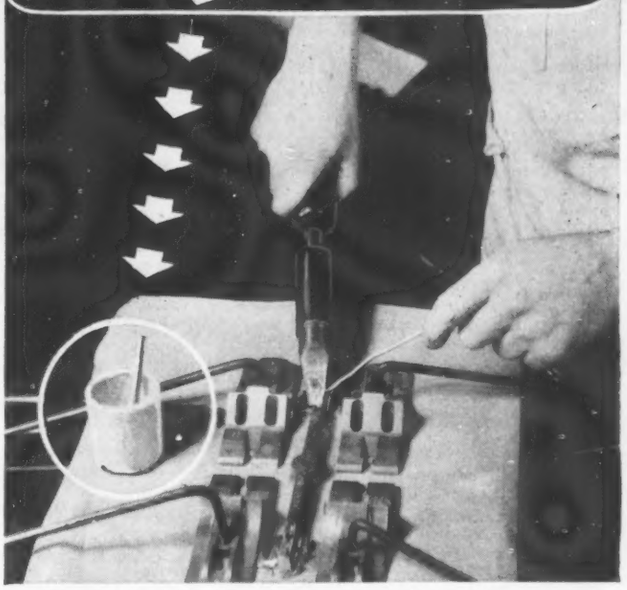
SHUSTER

Automatic

WIRE STRAIGHTENING AND CUTTING MACHINES

Since 1866

START OF A *Good* SOLDERING JOB



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CALIFORNIA

LOS ANGELES—Keystone File Sharpening Co. has let contract to W. S. Blomquist, 4000 East Florence Ave., Bell, Calif., for a one-story factory building 43 x 90 feet at 7722 Maie Ave., Los Angeles. E. C. Hillman Jr., 412 Architects Bldg., Los Angeles, is architect.

LOS ANGELES—Pacific Metal Products Co. has let contract to Edward R. Siple Co., 2545 San Fernando Rd., for a metalworking shop 50 x 100 feet, to cost about $20,000, at 3005 Marguerite St. Clyde Deuel, 257 South Spring St., Los Angeles, is engineer.

MONTEBELLO, CALIF.—Union Iron & Steel Co., 1600 North Indiana St., Los Angeles, has let contract to H. F. Hendrickson Co., 2811 Clearwater St., Los Angeles, for a one-story office building 38 x 156 feet, to cost about $30,000.

CONNECTICUT

BRIDGEPORT, CONN.—Remington Rand Inc., 2 Main St., has let contract to Gellatly Construction Co., 25 Housatonic Ave., for a plastics plant to cost about $225,000.

HARTFORD, CONN.—Superior Spring & Mfg. Co. Inc., 297 Washington St., will build a one-story 80 x 155-foot plant addition, to cost about $50,000. G. L. Dunkelberger, 44 Wolcott Hill Rd., is architect.

ILLINOIS

CHICAGO—Utility Tool & Die Works, 430 South Green St., has let contract to Continental Construcion Co., 340 North Central Ave., for a one-story 100 x 125-foot plant and office building, estimated to cost about $80,000. F. W. Langenrich, 4541 West Washington Blvd., is architect.

INDIANA

MUNCIE, IND.—Warner Gear Division of Borg Warner Corp. has let contract to A. J. Glaser & Associates, Muncie, for a new plant building and three additions to plant, estimated to cost about $650,000.

IOWA

LUANA, IOWA—Hoth Hay Mower Mfg. Co. suffered loss of about $175,000 in a fire caused by lightning. Products are mowers, hoists and hand winches.

MARYLAND

BALTIMORE—Procter & Gamble Co. has let contract to H. K. Ferguson Co., Cleveland, for tanks, pumps and piping to cost about $300,000, for its plant at 1000 Haubert St.

MICHIGAN

BATTLE CREEK, MICH.—Johnson-Hall Co. Inc., 39 Eldred St., has been incorporated with 20,000 shares no par value to manufacture mechanical brushes and machines, by Franklin D. Johnson, same address.

DETROIT—Redford Engineering Co., 21200 West Eight Mile Rd., has been incorporated with $75,000 capital to manufacture tools, dies, jigs and fixtures, by Merton P. Collom, 20051 Greydale St.

DETROIT—Tritan Corp., 6432 Cass Ave., has been incorporated with $50,000 capital to manufacture automotive parts and toys, by Irvin Tann, 3750 East Outer Dr.

DETROIT—Tydings Engineering Co., 16895 Lahser Rd., has been incorporated with $50,000 capital to manufacture furnaces, by William F. Tydings, same address.

DETROIT—Metal Parts Machine Co. Inc., 1742 Rivard St., has been incorporated with $100,000 capital to manufacture metal products, by John M. Brady, 14579 Forrer St.

DETROIT—Infra-Lectric Radiant Heater Corp., 1043 Spruce St., has been incorporated with $50,000 capital to manufacture space-heating devices, by F. L. Jacobs Co., same address.

GRANDVILLE, MICH.—Hansen Machine Co., Chicago Drive, has been incorporated with $25,000 capital to manufacture tools, dies and machinery, by Carl C. Hansen, 3194 Homewood St.

MARSHALL, MICH.—Marshall Brass Co., 521 South Kalamazoo St., has been incorporated with $150,000 capital to manufacture metal products, by Cyril O. Kusel, 700 North Kalamazoo St.

OAK PARK, MICH.—Appliance Development Co., 21750 Wyoming St., has been incorporated with 50,000 shares no par value to manufacture mechanical appliances, by Archie S. Browne, 13980 Birdwood Ave., Detroit.

YPSILANTI, MICH.—Washtenaw Pattern Co., 9 South Adams St., has been incorporated with $25,000 capital to manufacture metal patterns, by James N. Giles, 1950 Richmond Rd., Toledo, O.

OHIO

AKRON—Ohio Edison Co., Walter H. Sammis, president, 47 North Main St., will build a $2,600,000 addition to Mad river plant at Springfield, O., to increase generating capacity of the area about 40 per cent. Work will start in 1947.

AKRON—Ohio Diesel Engines Inc. has been organized by D. E. Davis, 503 Second National Bank Bldg., and associates, with $2000 capital, to manufacture machine tools, motors and automotive equipment.

ASHTABULA, O.—Electro-Metallurgical Co., East Lake Rd., subsidiary of Union Carbon & Carbide Co., plans to buy the government-owned ferrosilicon plant it operated during the war and to build power plant and a dust and fumes control system, at total cost of about $15 million.

CLEVELAND—Zatko Metal Products Co. has been incorporated to succeed Cleveland Aircraft Tool & Die Co., 9016 Manor Ave., and is building a 15,000-square foot plant at St. Clair Ave. and East 210th St. Products will be stampings and dies for automobiles.

CLEVELAND—Commercial Induction Inc. has been incorporated by Ben Botta, 3588 East 147th St. and will establish a plant for treating, hardening and annealing of steel and iron products, for which he is seeking machinery and equipment.

COSHOCTON, O.—General Electric Co., Nela Park, Cleveland, will build plant here and transfer operations from Lynn, Mass. Laminated plastics will be manufactured. Plant is planned to be ready by August.

EAST LIVERPOOL, O.—Pleasant Heights Foundry Co. has been incorporated by William N. Simms, Lisbon St., with $25,000 capital, to manufacture cast iron and other metal products.

INDEPENDENCE, O.—Quality Tool & Die Co. has been incorporated by Steve Bushi, 7286 Crossview Rd., Independence, to manufacture tools, dies and jigs. Malcolm Y. Yost, Society for Savings Bldg., Cleveland, is statutory agent.

NEWTON FALLS, O.—Newton Falls Steel Tube Co., Center St., has obtained approval for a $56,000 plant addition to enlarge manufacturing and storage facilities.

PAINESVILLE, O.—Diamond Alkali Co., J. T. Richards, president, will build $5,700,000 plant at Houston, Tex., for manufacture of electrochemicals, chlorine, caustic soda and muriatic acid, including eight buildings.

PENNSYLVANIA

HARMARVILLE, PA.—Gulf Research & Development Co., Gulf Bldg., Pittsburgh, plans a one-story 70 x 120-foot boiler house at its power plant, to cost about $150,000.

A HIGHLIGHT OF OUR SERVICES

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SPOT the treatment at points of wear. The result: Your parts of inexpensive, easily machined metal, are reinforced with the high performance of costly steels. That's how Lakeside's perfected flame hardening process has made possible important savings for die makers and manufacturers ever since it was pioneered by us in 1930.

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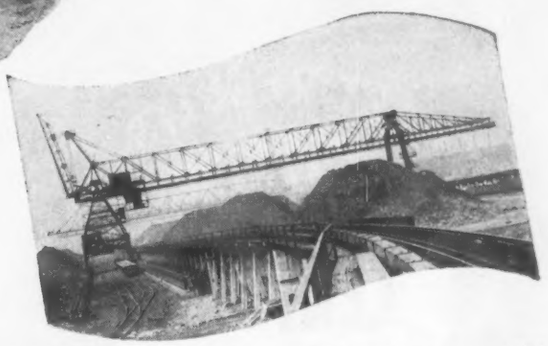
6 Points

ABOUT I. B. LOCOMOTIVE CRANES WELL WORTH YOUR CONSIDERATION

- Sure, sensitive response to air-operated controls speeds up the job with less operator fatigue.
- Anti-friction bearings at all essential points minimize maintenance.
- Monitor-type cab affords operator 360° visibility.
- One-piece cast steel bed insures rigidity of mechanism, prolonging crane life in constant heavy service.
- Rotating and travel friction disc clutches with 1-point adjustment reduce wear and strain on mechanism.
- Industrial Brownhoist Locomotive Cranes assure fast, economical handling of all materials with hook, magnet, or bucket with a minimum of downtime.

The I.B. 17-20 ton traveling ore bridge illustrated here typifies the engineering and construction superiority found in Industrial Brownhoist bridges, car dumpers, portal pier cranes, and other big materials handling equipment. For the engineered answer to your materials handling problems get in touch with I.B.



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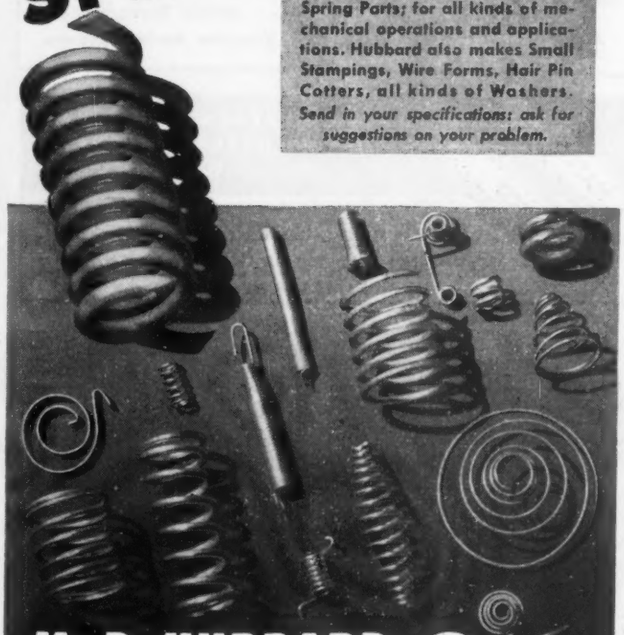

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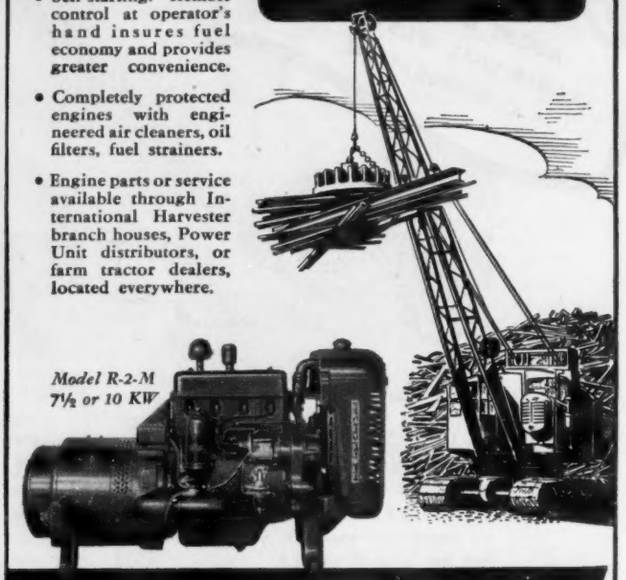

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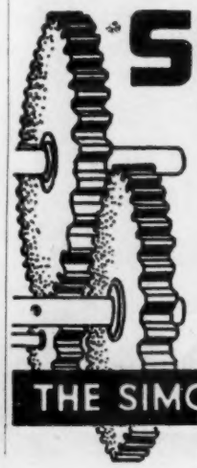

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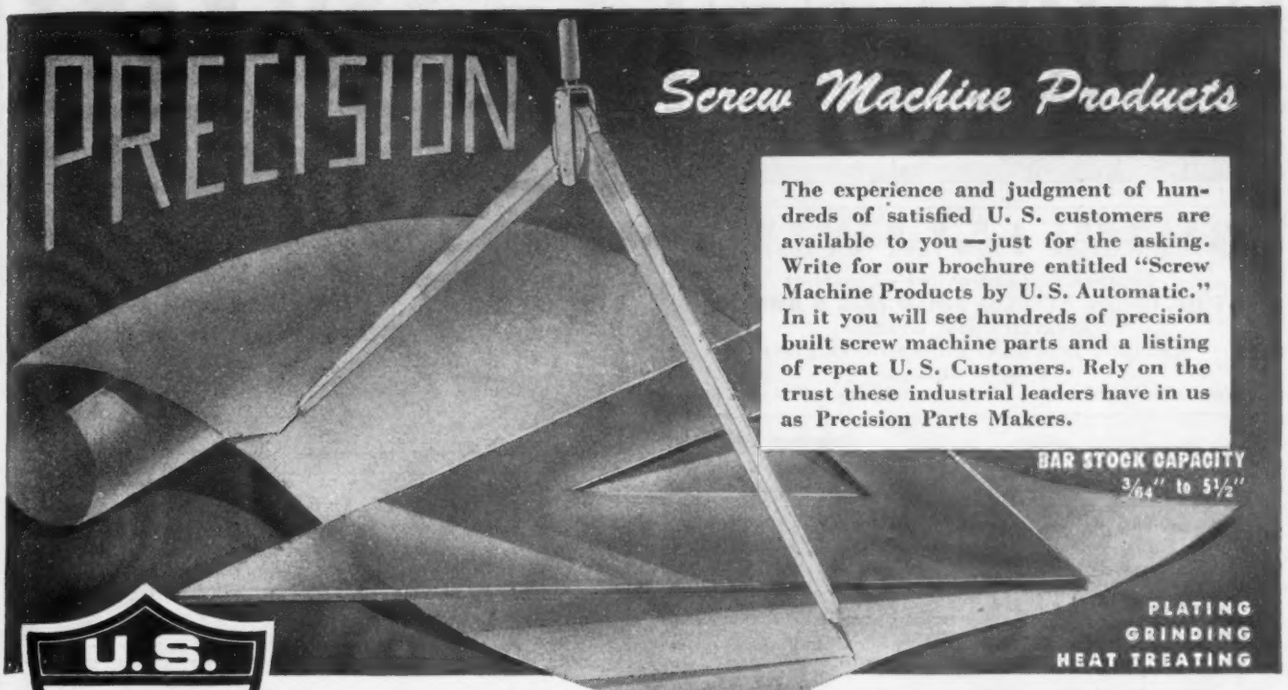
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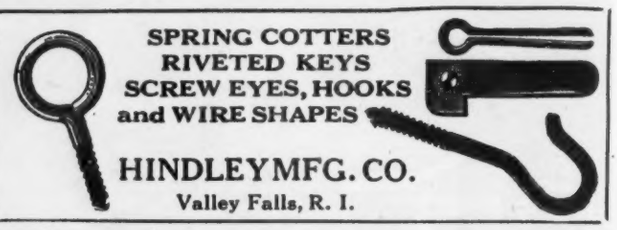

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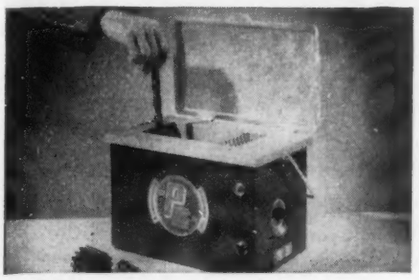

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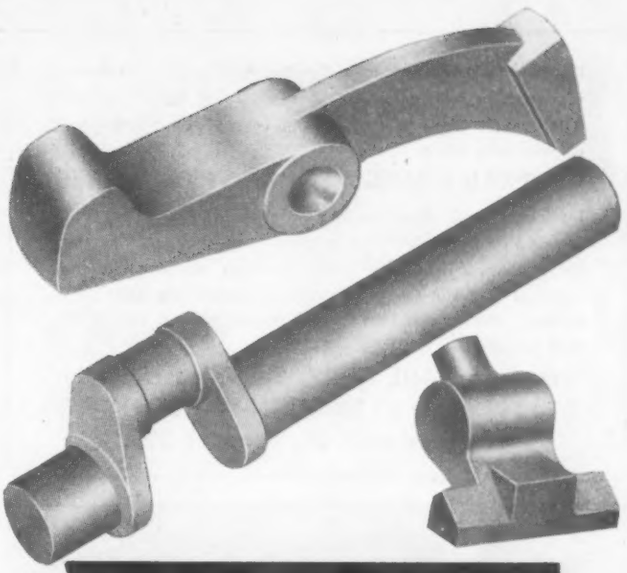

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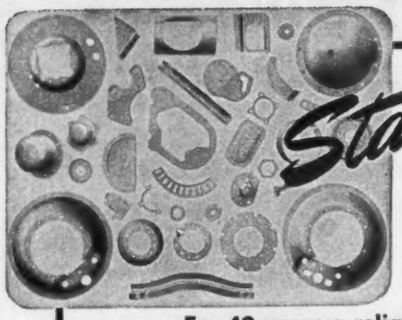

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ADVERTISING INDEX

A

Abrasive Products, Inc. 160
Agerstrand Corp. 179
Air Reduction 16
Alemite Division, Stewart-Warner Corp. ... 133
Allied Products Corporation 171
Allis-Chalmers Mfg. Co. 26, 27
Aluminum Company of America 24
American Brass Co., The American Metal Hose Branch 131
American Foundry Equipment Co. 142
American Metal Hose Branch, The American Brass Co. 131
American Petrometal Corp. 174
American Rolling Mill Co., The 89
Arms-Franklin Corporation, The 9
Atlas Drop Forge Co. 176
Avondale Marine Ways, Inc. 126

B

Baldwin Locomotive Works, The, Locomotive & Southwark Division 55
Bell Engineering 34
Belmont Iron Works 174
Bethlehem Steel Co. 1
Bixby, R. W., Inc. 179
Bridgeport Brass Co. 147, 148
Brush Development Co., The 50
Bryant Chucking Grinder Co. 75
Bundy Tubing Co. 111

C

Carnegie-Illinois Steel Corp. 44, 45
Carpenter Steel Co., The 105
Cattie, Joseph P., & Bros., Inc. 176
Cincinnati Shaper Co., The 2
Cleveland Crane & Engineering Co., The 107
Cleveland Metal Abrasive Co., The 172
Cleveland Wire Spring Co. 11
Cold Metal Products Co., The 109
Columbia Steel Co. 44, 45
Crucible Steel Company of America ... 128, 129
Curtis Pneumatic Machinery Division of Curtis Manufacturing Co. 159

D

Darwin & Milner, Inc. 174
Diamond Mfg. Co. 175
Differential Steel Car Co. 172

E

Electric Controller & Mfg Co., The ..... Inside Front Cover
Electro Refractories & Alloys Corp. 48
Elwell-Parker Electric Co., The 25
Erie Steel Construction Co. 168

F

Farval Corporation, The .... Inside Back Cover
Foster, Frank B. 178
Foster, L. B., Co. 177, 178

G

Gates Rubber Co., The 54
General Blower Co. 178
General Electric Co. 38, 39
General Steel Warehouse Co., Inc. 115
Gerding Bros. 179
Gisholt Machine Co. 41
Great Lakes Steel Corp. 80
Gulf Oil Corporation 3
Gulf Refining Co. 3

H

Handy & Harman 40
Hanna Furnace Corporation, The 165
Hanson Mfg. Co., The 23
Harnischfeger Corporation 173
Hindley Mfg. Co. 174
Hobart Brothers Co. 174
Holcroft & Co. 57
Horsburgh & Scott Co., The 157
Hubbard, M. D., Spring Co. 171
Hydraulic Machinery, Inc. 83

I

Illinois Tool Works 29
Industrial Brownhoist Corp. 171
Inland Steel Co. 63
International Nickel Co., Inc., The 35
Irwin Manufacturing Co., Inc. 174

J

Jackson Iron & Steel Co., The 174
Jeffrey Manufacturing Co., The 46
Jessop Steel Co. 7
Johnson Gas Appliance Co. 139
Jones & Laughlin Steel Corp. 118, 119

K

Kearney & Trecker Corporation 12, 13
Kester Solder Co. 169
Kinnear Mfg. Co., The 164
Kury, Paul 176

L

Lakeside Steel Improvement Co., The ... 170
Lamson & Sessions Co., The 17
Lebanon Steel Foundry 22
Le Blond, R. K., Machine Tool Co., The ..... Back Cover
Lehmann Machine Co. 14
Littell, F. J., Machine Co. 167
Locomotive & Southwark Division, The Baldwin Locomotive Works 55
Logan Engineering Co. 141
Logemann Brothers Co. 155

M

Maehler, Paul, Co., The 10
Meehanite Research Institute 113
Michiana Products Corporation 161
Midwest Steel Corp. 177
Molybdenum Corporation of America 30
Morse Chain Co. 32

N

National Fireproofing Corporation 172
National Lead Co. 31
National Steel Corporation 33, 80, 165

O

Ohio Crankshaft Co., The 125
Ohio Locomotive Crane Co., The 175
Ottumwa Iron Works 143

P

Parish Pressed Steel Co. 64
Parker Appliance Co., The 37
Peninsular Grinding Wheel Co., The 18, 19
Penola, Inc. 140
Pesco Products Co., Division Borg-Warner 52
Phoenix Manufacturing Co. 175
Pittsburgh Coke & Chemical Co. 167
Pittsburgh Commercial Heat Treating Co. 174
Pittsburgh Crushed Steel Co. 176
Porter, H. K., Co., Inc. 121
Progressive Systems, Inc. 175

R

Rail & Industrial Equipment Co. 177
Reading Chain & Block Corporation 166
Ready-Power Co., The 172
Republic Steel Corporation 51
Rockford Machine Tool Co. 134
Roebling's, John A., Sons Co. 20, 21
Ruemelin Mfg. Co. 158
Ryerson, Joseph T., & Son, Inc. 174

S

Sciaky Bros. 8
Scovill Manufacturing Co. 15
Scully-Jones & Co. 116
Shell Oil Co., Inc. 58
Shuster, F. B., Mfg. Co., Inc., The 169
Simonds Gear & Mfg. Co., The 172
Socony-Vacuum Oil Co., Inc. 43
Sonken-Galamba Corp. 177
Steel Founders' Society 42
Steel Improvement & Forge Co., The 49
Steel Shot & Grit Co. 176
Steelweld Division, The Cleveland Crane & Engineering Co. 107
Stuart, D. A., Oil Co., Ltd. 163

T

Taylor-Winfield Corporation, The 28
Tennessee Coal, Iron & Railroad Co. 44, 45
Thomas Machine Manufacturing Co. 165
Timken Roller Bearing Co., The ..... Front Cover

U

Union Chain & Manufacturing Co., The 60
United States Graphite Co., The 137
United States Steel Corp., Subsidiaries 44, 45
United States Steel Export Co. 44, 45
U. S. Automatic Corporation 173

V

Vanadium Corporation of America 47
Veeder-Root, Inc. 6

W

War Assets Administration 53
Weirton Steel Co. 33
Wellman Engineering Co., The 5
West Penn Machinery Co. 178
Whitehead Stamping Co. 176
Wolff, Benjamin, & Co. 91
Worcester Pressed Steel Co. 56
Wrigley, Wm., Jr. Co. 162

Y

Youngstown Sheet & Tube Co., The 36

Table of Contents, Page 59
Classified Advertisers, Pages 177, 178, 179

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1. Number of Machines	12	5
2. Type of operation	Continuous, 24 hrs. daily*	Continuous, 24 hrs. daily
3. Lubrication Shutdowns	Every 4 hours*	None
4. Bearing history	Frequent failure* Replacements necessary*	Condition excellent No visible wear
5. Maintenance cost	100%	25%
6. Production output	88%	100%

* Continuous operation could not be maintained because of lubrication shutdowns and bearing failures.

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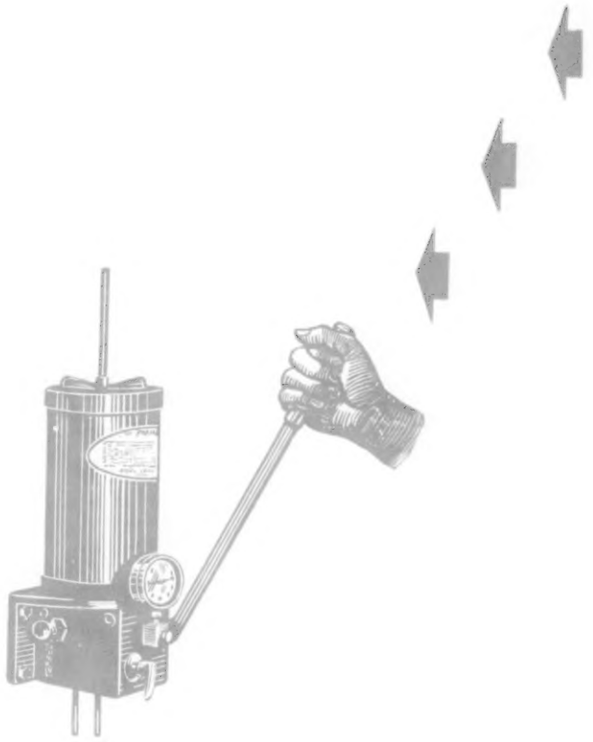

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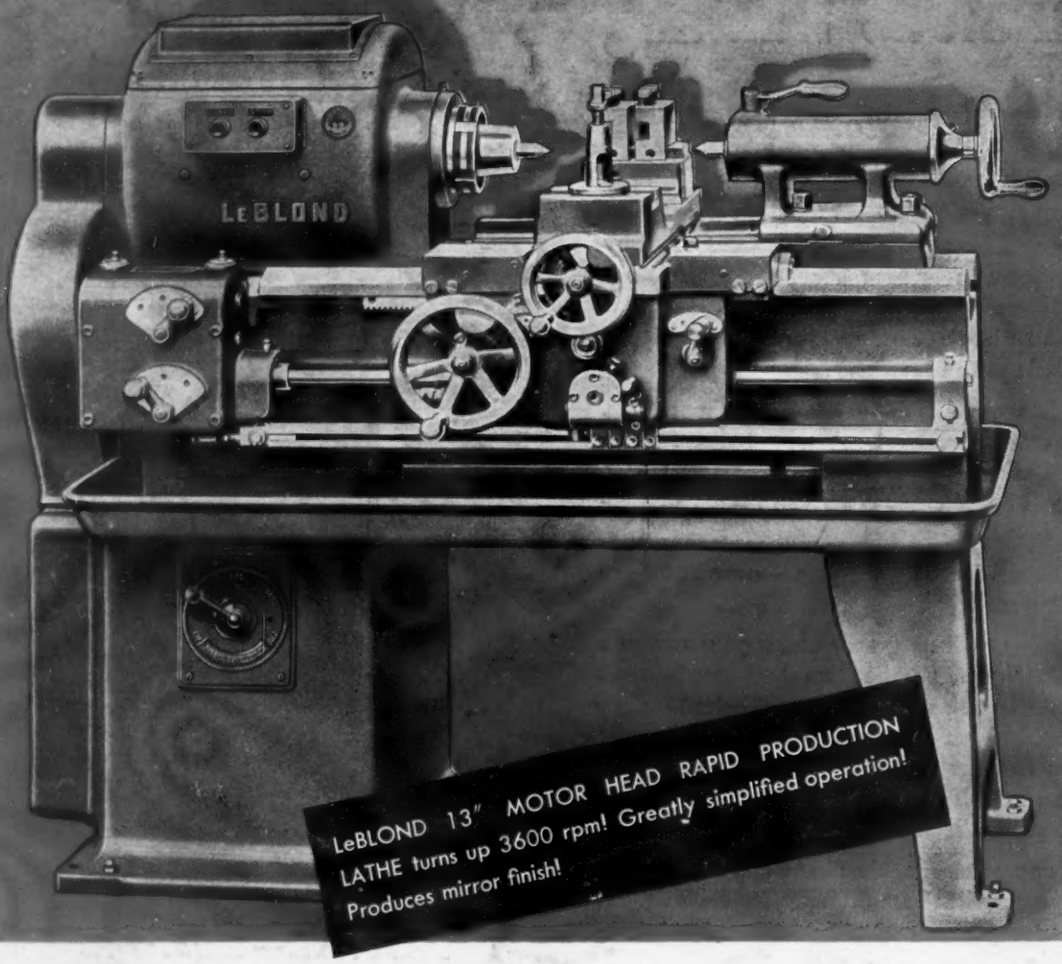
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